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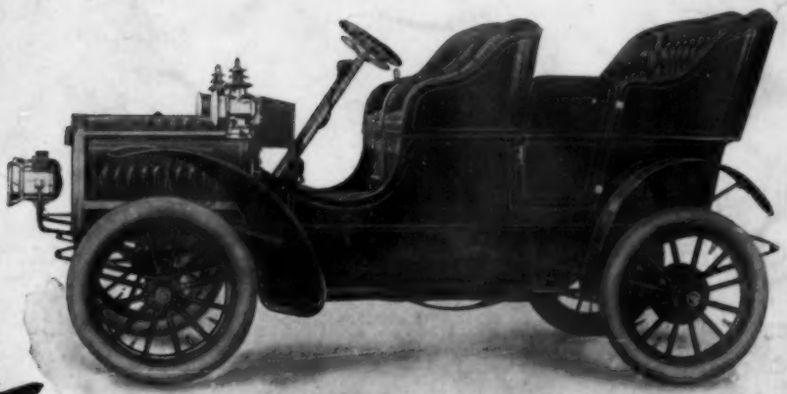

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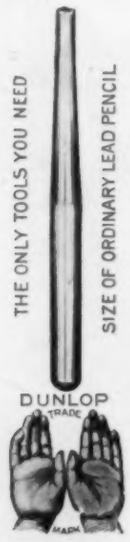

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THE AUTOMOBILE

WEEKLY NEW YORK—SATURDAY, JANUARY 7 1905—CHICAGO 10 CENTS

SOCIAL AND COMMERCIAL ASPECTS OF THE SHOW.

Especially Reported for THE AUTOMOBILE.

PARIS, Dec. 16.—If a foreigner were to find himself suddenly under the corruscating roof of the Grand Palais, without being prepared for the scene by previously dodging the automobiles and running the gauntlet of the prospectus distributors out of doors, he would feel as if he had unaccountably dropped into a ballroom in working dress. He might be overcome with an uncontrollable desire to rush home for his frock coat and silk hat. This momentary nervousness would probably be dispelled when he had time to see that amidst the well-dressed throng there were plenty of others like himself, for in France any kind of dress is tolerated except straw hats and white ducks in winter. As soon as the unsophisticated stranger pulls himself together he will wonder at the hum that fills the building from myriads of conversational voices, sounding like a one-tone minor accompaniment to the orchestra and choir in the gallery above.

This is Friday—a "select" day, when the price of admission is put up, and the usual orchestra is replaced by the musical artists from the opera, together with the opera chorus, whose music and singing of Johann Strauss, Wagner, Fahrbach and other masters swell through the hall like the sounds of a great living organ. A lover of music has no need to go to the opera; he will find it at the automobile show.

When the stranger has straightened his ideas out of this maze of sound, light, color and life he will ask himself what it all means. If the object of a maker is merely to sell cars it is evident that he could do this without going to the trouble and expense of laying out his vehicles in an artistic setting. He deals principally with provincial and foreign agents and experienced automobilists, who do not allow their impressions of a car to be influenced by the beauty of a stand. In fact, those who go to the show to do business would generally prefer to dispense with all this glitter so as to avoid being inconvenienced by the crowd. And yet, while the club is lavishing money on illuminations, some of the exhibitors are spending as much as $5,000 on their stands.

Photographed for THE AUTOMOBILE *by Brauger, Paris*

INVASION OF PARIS BY AN AMERICAN CAR.

Pope-Toledo 24-Horsepower Touring Car in Front of Arc de Triomphe, Place de l'Etoile, Paris.—H. H. Lyttle at wheel, Harold Pope beside him on front seat.

If the French exercise their genius for display at such heavy expense to themselves it is evident that they have some other object in view besides simply attracting buyers. Ever since the French club took over the work of organizing the shows seven years ago they have always followed a definite policy, which is to make the annual Salon serve as a lever for developing the automobile movement. Seeing that the French have specialized themselves particularly in high-grade cars, they have to open up an increasingly widening demand among the wealthier classes, and thus the whole effort of the organizers is centered in creating an interest in the antomobile among those who have money to spend. The show must be made a powerful attraction, and each Salon must surpass in splendor the preceding one. In this way it has become one of the great social events of the year. Conversation turns upon the Salon and every one must go there, and for two weeks the very atmosphere is laden with the automobile.

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To give the Salon a popular as well as an aristocratic standing it has to be inaugurated by the President of the Republic, who has for some years past testified his interest in an "eminently French industry" by paying a visit to the annual show. The only thing that has given rise to concern among automobilists is that M. Loubet had never ridden in an automobile. The Protocol, which looks after the little old gentleman, and regulates all his official acts, was a long time making up its mind whether M. Loubet could be allowed to shake off the ties of tradition by placing himself at the mercy of the modern means of locomotion. M. Loubet has taken the matter in his own hands.

On leaving the Grand Palais, after the inauguration, a fine covered automobile was waiting for him. Under the scandalized eye of the Protocol, M. Loubet got in. The automobile did not rear or jump or take the bit between its teeth. It moved off quietly with the President and his bodyguard, while photographers snapped what has become an important event in automobile history. M. Loubet was followed by the King of Portugal, who has introduced the motor vehicle into his country, and has set a fashion which is likely to make Portugal a good market in the future; and the King of the Belgians has never yet failed to pay a flying visit to Paris to place an order for one or two cars with the firms who supply his somewhat extensive automobile "stable."

It will thus be seen that the Paris Salon has been cleverly organized to make the automobile a fashionable pastime. Being carried out to appeal to the artistic sentiments of the Parisians, the show has become the general place of meeting where people go because they know that they will find their friends, and it naturally follows that when they see others buying cars they will be impelled to do likewise. This business more especially benefits a few firms who have a very high Parisian reputation like Panhard, C. G. V. and Renault, and the builders of electric carriages are also doing more with Parisian customers than at previous shows.

Although the business done by rich customers is considerable it only represents a small proportion of the entire amount of trade transacted with provincial and foreign agents. While the French provinces are placing a far larger number of contracts than ever before, the English have come to the Salon in particularly strong force. Some of them are arranging with the firms whose cars they have been handling in the past, others are looking out for makers who will supply vehicles they can sell in England under their own names. This is very curious at a moment when the English makers claim that they can turn out cars as well and as cheaply as the French.

While the orders taken show that the French car will more than ever dominate the English market, it does not seem as if much is being done on account of the United States.

Local authorities state that so much other business is being done at the show that the American trade seems to have dropped temporarily out of the reckoning. Certainly it is a fact that outside of members of the trade in New York and representatives of some of our large factories, Americans are not much in evidence at the show. Possibly those purchasers who must have foreign built cars are waiting until the coming shows in New York before coming to a decision, knowing that the display of foreign cars at the Importers' Salon and the Garden show will include a greater number of machines than have ever before been on public exhibition.

It is, however, but the beginning of the end which when it comes will see American builders not only supplying the domestic needs, but in certain classes of machines making keen competition for the foreign builder. A careful survey of the Pope exhibit here sets the native thinking.

Commercial Vehicles Exhibited in Paris.

Special Correspondence.

PARIS, Dec. 20.—Owing to the large extension of this year's automobile show, a portion of the exhibit has had to be housed away from the Grand Palace. The Serres de la Ville, on the banks of the river Seine, used during the international exhibition of 1900 as a conservatory and aquarium, now contains a most interesting exhibit of heavy vehicles for commercial purposes, machine tools in motion, and a widely representative exhibit of power boats. On the opening day this annex was a chaos; a week later everything was finished, and the small building had almost as smart an internal appearance as the large palace across the Cours la Reine.

The commercial vehicles may be divided into three classes: Standard types of chassis—strengthened, of course, to carry heavier loads—on which a special body suitable for business purposes has been fitted; heavy trucks, with motor differing more or less from those used on a touring car, and vehicles constructed for special work.

A considerable number of very smart express service delivery vans are on exhibition. Nearly all of these are constructed on exactly the same lines as the touring models of the different firms, the chassis being strengthened and a special body fitted.

Decauville Light Delivery Van.

At the Decauville stand is shown a 12-16-horsepower delivery van capable of running at twenty-five miles an hour. The chassis is of pressed steel, the motor being placed forward under the bonnet. It has a honeycomb type of radiator, with fan behind it, and the motor is protected underneath by a complete dustpan. The motor is perfectly accessible on lifting up the bonnet, and on taking out the floor board the change-speed gear can be readily got at. Sparking is by accumulator. One-half the space under the driver's seat is occupied by a gasoline tank, the other half being fitted as a tool-chest. The body work is strongly constructed of pitch pine, entrance being at the rear, or by means of panel doors behind the driver. The hood, or top, extends over the driver's seat, which is also protected in front by a glass shield, and around the top is a wire railing to allow of goods being carried outside.

Olds Express Wagon and Railroad Car.

The Olds Motor Works has an exhibit in the commercial vehicle section also, and shows one of its new express delivery wagons, with pressed steel frame and chain drive. It has entrances both at front and rear, and the model shown has wire netting sides, the interior being visible from outside. A railroad inspection car—the type used on the Chinese railways—is shown also at this stand. It has comfortable seating room for two persons.

French Commercial Wagons.

At the Dietrich stand one of the firm's standard types of chassis is exposed, with a body suitable for rapid delivery work, entrance being by rear door, or by means of a roll shutter behind the driver. Panhard & Levassor also show their standard models, with bodies for commercial purposes, having rear entrance doors and roll shutter front.

The De Dion firm shows a 10-horsepower two-cylinder delivery wagon capable of carrying a load of 800 kilos. Tubular side frames and cross sections are used, and the engine is placed forward under the bonnet, the radiator being in front, below and between the side frames, as on the 1905 touring model.

At the Renault stand is also a fast delivery van, having side frames, transmission by cardan shaft and front and rear entrances to interior of body. Rear entrance can only be opened by releasing a catch at the side of driver's seat.

Delahaye and Panhard Ambulances.

At the Delahaye stand is a very serviceable ambulance car. With a chassis of 2 meters 800 centimeters wheel base, the 12-horsepower motor is placed under the bonnet, the car being chain driven. Entrance is by door at the rear, and the interior of car is especially fitted for the work it has to perform. The floor is covered with zinc,

all the windows are of frosted glass, and the interior is painted white. All side windows can be let down, and ventilation is assured by sliding ventilators between the main roof and a raised roof. The camp bed has rubber castors, which repose on a movable metal *bogie*, thus allowing the patient to be placed in and taken out of the ambulance without the least shaking.

Another ambulance of quite a different type is on view at the Panhard & Levassor stand. This is a 10-horsepower military ambulance wagon, especially fitted internally for the use of X-rays or for wireless telegraphy. The fittings, however, are kept secret from the public. The motor is fixed forward under the bonnet, and the gasoline tank is forward on the car body, behind the driver. Under the seat is a dynamo driven by a belt from a pulley on the main shaft, and requiring 2-horsepower. When the car is running the belt hangs so loose on its pulleys as not to drive the dynamo. To start this latter the engine is left running with the clutch out, and a lever regulating the position of a jockey pulley is pushed in until the belt is tightened enough to drive the dynamo. The electricity obtained from the dynamo is used for surgical operations within the car.

Truck Without Change Speed.

Among heavy trucks there is much less uniformity of mechanical construction. At the Hagen stand is a truck weighing three tons, with carrying capacity of three tons. Its motor registers 14 horsepower, and its speed is from seven to ten miles an hour. The over-all dimensions of the truck are 5 meters 50 centimeters by 2 meters, and of the body 3 meters 64 centimeters by 1 meter 85 centimeters. The two-cylinder motor is placed under a bonnet at front of car, immediately behind the radiator and fan. The feature of this vehicle is that all change-speed gearing is abolished, the car starting and passing progressively to its maximum speed of ten miles without intermediary gear.

Front Wheel Drive Wagons.

At the Avant-Train Latil stand all the vehicles are driven by power applied to the front wheels. The motor is placed under the bonnet at the fore end of the car, the radiator being hung below the front cross section. To the left of the motor is the clutch, and a little further to the left the change-speed gear, there being three speeds and reverse. On the main shaft is a pinion in mesh with an intermediary shaft, which, by means of a special cardan at each extremity, drives a small pinion meshing with a large pinion on each front wheel. All gearing is enclosed in cases, and there is an entire absence of cone gears. At the fore end of the car are two semi-elliptic springs, placed longitudinally, and a third transverse spring. At the rear there are only two semi-elliptic springs.

A van for transporting racehorses is displayed with this front drive; this, owing to its peculiar form, being a vehicle not easy to accommodate to a rear drive.

Kriéger Combination Truck.

A combined gasoline and electric truck is shown for the first time at the Kriéger stand. The same concern also shows in the Grand Palais a chassis on the same principle, suitable for a touring car. Briefly, the chassis consists of a gasoline motor driving a generating dynamo, which charges two electric motors in gear with the driving wheels. Change-speed gearing is, of course, abolished, the car having the same regulative capacity as an electric vehicle, without its disadvantage of recharging batteries. The weight of the truck shown is two and one-half tons, and it is capable of drawing a load of five tons. The gasolene motor is of 16-horse-power, capable of supplying power to drive the truck at a speed of nine miles an hour. The wheelbase is 2 meters 600 centimeters. A complete dust-pan encloses the under side of motor.

The Decauville firm shows a two-cylinder 12-horsepower truck, chain driven, and capable of carrying from two and one-half to three tons. The frames are of pressed steel of extra strength, and the motor is placed under the driver's seat, where it is easily accessible. The radiator is on the hood over the driver's seat. There are three speeds, giving three, five and ten miles an hour.

Most of the heavy vehicles have metal rimmed wheels, a few, however, being fitted with rubber bands on the front wheels.

Self-Propelled Omnibuses.

There are quite a number of omnibuses on exhibition, all very similar in their general disposition—chain or cardan driven by motors fixed on the fore part of the vehicle—but differing considerably in their body work. The De Dion-Bouton firm shows an omnibus similar to those now in use in different parts of Normandy. The motor is under the driver's seat, and can be conveniently examined by means of side doors. The water and gasoline tanks are behind the front seat, and the radiator is attached to the dash. The transmission in no way differs from the standard type adopted by this firm, being by means of a cardan shaft. The body is supported by four longitudinal semi-elliptic springs and a rear transverse spring. Entrance to the 'bus is by means of a platform at the rear, there being seating capacity for eighteen passengers on the 15-horsepower four-cylinder model.

At the Aries stand is shown a 12-14-horsepower omnibus, with two-cylinder motor placed under the front seat, and chain drive. Entrance to the 'bus, which has two longitudinal seats, is by a platform just behind the driver's seat. The wheels are shod with rubber, and the speed of the vehi-

CHASSIS OF KRIÉGER COMBINATION GASOLINE AND ELECTRIC CAR EXHIBITED AT PARIS AUTOMOBILE SALON.

cle is from twelve to sixteen miles an hour. A similarly disposed car is shown at the stand of Martini & Co., the entrance being from a platform at the rear.

Decauville Motor Street Car.

A tram-car which has already had a great success is shown at the Decauville stand. It consists of a bogie carrying three transverse seats with reversible backs. Enclosed under the front seat in the water tank. under the second one sand is stored, and under the third is the 10-12-horsepower motor. There are three speeds and reverse, and the tram has sufficient power to draw another car of the same weight. Passengers are protected from sun and rain by a dais, to which can be fitted movable slide screens.

Another vehicle running on rails is a De Dion-Bouton quadricycle for inspection of railways. On the fore part is a seat for two persons, and behind it the driver's seat, the motor being placed at the rear, between two cross sections. On the level, this quadricycle is said to be capable of a speed of thirty-eight miles an hour.

The Renard train, which caused so much interest last year, is now on view in the Salon, consisting of four vehicles, one of which is a six-wheeled omnibus. The invention of Colonel Renard consists of a train which may be made up of any number of units, the motive power being supplied by the motor car at the head of the procession, and transmitted by means of a continued shaft to all the cars forming the train, each vehicle in the procession having its own transmission gear and differential. Demonstrations have been given in different parts of France during the past year, showing that the train, however long it may be, is capable of being steered with absolute certainty, some of the tests in the narrow streets of French provincial towns being of a most difficult nature.

Some Special Features at the Show.

Special Correspondence.

PARIS, Dec. 13.—Many cars are exhibited which, while lacking in general interest, show a few novel and interesting features, or are based on rather new principles. For instance, the combination of gasoline and electric motors in use for some years on both sides of the Atlantic, is shown in the Kriéger and two other makes.

In the Kriéger car the immediate driving power is electricity, generated by a four-cylinder gasoline motor in front under a hood, direct-connected to a dynamo. The current thus generated is carried by wires to separate motors on each of the rear wheels, thus ensuring all the advantages of the electric car without change-speed gears, shaft, chains or differential.

The two other cars are very similar in general construction. The engine, generator and motor are on one single line of shaft, interrupted only between the generator and motor, this general axis lying lengthwise in the center of the car. The engine drives the generator by a single shaft. The motor is followed by a universal joint and a live propeller shaft, which, by means of a bevel pinion, drives the differential wheel of a live rear axle of standard construction.

The only difference between these two cars is that in one the driving is always by means of the electric motor and the resistance, while in the other a clutch of ordinary gasoline car construction is placed between the generator and the motor shafts so that for the highest speed the gasoline engine drives direct to the axle, through the uninterrupted transmission, the motor and generators running idle as mere flywheels without generating or using any current. In this last instance the gasoline motor is provided with all the usual means of control.

The Electro-Magnetic Clutch.

Another very interesting application of electricity to the transmission of the power generated by a gasoline engine is that shown in La Magnetic car.

This car strikes one at first sight by the total absence of side levers and clutch mechanism; the engine has four cylinders, and is made in two sizes, 10-12 and 16-20 horsepower, driving through propeller shaft or side chains at will through a gear-box containing five sets of spur wheels, which give four speeds and a reverse, the high speed being direct. The gears are constantly in mesh and there is no main clutch. Each speed is obtained by an individual magnetic clutch composed of two magnetic steel plates, one fast with the change-speed gear shaft and the other one idle on this shaft very close to the fixed one. One of these plates is hollow and contains the necessary electro-magnet winding to transform it into a powerful magnet which attracts the other plate and thus makes the gear wheel or the shaft end, as the case may be, drive solid with the main motor shaft on which the magnetic plate is keyed.

The electric current, which is sent to the magnetizing wiring of each plate through brass rings and brushes, is generated by a small accumulator battery and a dynamo driven from the engine. The electricity is supplied under 4 volts and 8-10 to 9-10 of an ampere hour. The distribution of the current is made by a small handle similar to any other throttle or spark handle placed on top of the steering wheel. These clutches can be made to slip for any length of time without heating, and the reverse can be thrown in at any speed forward, even the very highest, and thus used as a powerful brake. The makers also supply separate speed boxes to fit to any type of car.

Direct Drive Without Gears.

"La Direct" is a car in which the change-speed gear is suppressed, the engine driving the rear live axle through a special clutch and a propeller shaft. The clutch is such that it can be slipped any desired amount, so as to enable the driver to let it in slowly, and thus start the car on its only ratio of gearing—which is that of the differential and is fairly high—without slowing down unduly the engine. This engine is of 50 horsepower, four-cylinder, reversible by means of two sets of cams which can be changed by a hand-lever on the steering wheel, after the engine has been stopped by cutting the spark; and will restart by putting on the switch after the change of cam has been made.

La Stabilia is an experimental model of a car studied to obtain an exceedingly low center of gravity, although the lowest part is 8 inches from the ground. It has given 42 miles an hour, average, with a 10-horsepower engine, the complete car carrying four passengers and weighing about 1,500 pounds, unloaded. This is an efficiency heretofore unattained, and the inventor has already booked several orders for fast cars, he claims.

The Four-Wheel Drive.

The Spyker is a Dutch car, the makers of which have brought out every year something new, and more or less extraordinary. This year, however, they have brought out a car which many have asked for of late—a four-wheel-drive car. In general construction it has no special features, but instead of the usual bevel gear at the rear end of the change-speed gear driven axle, it possesses a spur pinion meshing with a spur wheel. This wheel is carried between two bearings, while outside of each one its spindle carries a universal joint member from which start two propeller shafts that drive the front and rear live axles through differentials of usual construction. The rear wheels are fast with the like shafts of the rear axle in the usual way, while a universal joint contained inside the hollow spindle of the front steering wheels transmits to the latter the driving effort of the front axle differential.

Novelties in Details.

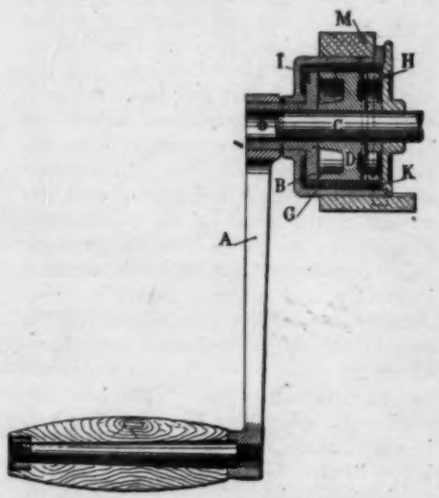
Passing now to the minor special features of other cars, which are otherwise on more standard lines, we find on the Rochet-Schneider the spark and mixture levers to be about a foot long and fulcrummed vertically on the dashboard, with very coarse-toothed sectors. When asked for the reason of this change, the makers stated that it is preferable to have them somewhat out of reach, so as to keep the driver from interfering too often with them, while the throttle handle placed on the steering wheel is all that is necessary to drive the car in ordinary conditions.

The C. G. & V. people show a brake braced with the rear axle radius rod, and of the internal expanding type, which should prove to be extremely reliable.

The Renault people show a new automatic carburetter in which, instead of the usual extra automatic air valve, they have a heavy brass disc of large surface, on the lower face of which the inrushing air aspirated by the engine is deflected, slightly raising the disc and uncovering to a certain extent proportionate to the air rush extra air ports, of a specially designed shape, which the makers endeavor to keep as secret as possible.

AIR-BRAKE ON THE MERCEDES.

The Mercedes agent showed on one of the days of the show a car which was removed almost at once for untold reasons. In this car, which was of the new 1905 model, a brake was fitted on each of the four wheels. This brake was of the compressed air type, and consisted of a tank containing air pumped into it by the engine at a pressure of ten atmospheres; a lever mounted on the steering wheel used to connect this tank with two cylinders, the pistons of which carry shoes, which, when pressure is sent in the cylinder, come in



GAUTEREAU SPRING STARTING CRANK.

braking friction with the internal faces of drums fastened on the hubs of the four wheels. This brake is claimed to bring the four wheels to a dead stop very quickly and without any jerk, no matter what their speed or the momentum of the car, even on a steep gradient, and to be released almost instantly by opening a relief valve, also actuated by the same small lever on the steering wheel.

NEW STARTING CRANK.

A very interesting and novel article is the Gautereau starting crank. When at rest all the parts of the appliance are idle and free to rotate in any direction, the friction box *I* being held by the lug *M*. When the starting effect is put on the crank the coils *K* of the spring *G*, fast to the plate *B*, are tightened around the nut *D*, fast on the driving shaft *C*. If it happens that the motor fires back, the nut *D*, seizing on the spring in the opposite direction to that of its winding, opens the said spring, freeing the nut and consequently the shaft in the backward direction, and the hand of the operator is not thrown back violently, as is the case with ordinary handles. By actual demonstration made in several places at the show, this crank appears to be exceedingly reliable and effective. In one instance an attempt to start a 35-horsepower engine with the spark fully advanced was perfectly harmless to the operator, although the engine gave, as might be expected, a tremendous backfire.

A few spring wheels were also shown, although they do not seem quite to the point yet, and are interesting more as praiseworthy attempts in a useful direction than as really marketable articles.

Electric Cars at the Paris Exposition.

Special Correspondence.

PARIS Dec. 23.—From the prosperous condition of most of the stands belonging to the electric car companies, it is evident that the electrics are by no means losing their popularity as a means of city conveyance. The best of the stands include the well-known names of Mildé (the firm recently supplying batteries for about thirty postal vans used by the Paris Postal authorities), Pope, Kriéger, Société Electromobile, Dinin and Garcin-Renault.

It can be stated at once that there are no startling improvements either in type of vehicle or efficiency of batteries at this year's show. The chassis partake of the lengthened form common to the gasoline cars, narrowing toward the front, thus rendering corners easier to negotiate. The lengthened frame has been taken advantage of by some of the firms to place a part of their batteries under a hood over the front axle—in fact, the Dinin cars frankly copy the gasoline type, even to the ventilating screen in the front of the hood.

The general radius of action of the batteries is very slightly improved to 75 miles and even 80 miles at full speed of 25 miles an hour. The Dinin company fit up cars for a commercial speed of 30 miles per hour, and claim a silent action obtained by the use of an air-tight gear-case containing an oil bath.

The Société Electromobiles exhibits its type of car with the motor mounted directly on the axle, thus avoiding the use of gearing.

L'Equipage Electrique states that it is ready to hire out its vehicles furnished with a taximeter similar to that used on a number of Paris cabs, and charge according to distance.

The Garcin-Renault appears to be making a specialty of delivery vans, and places the motor in the axis of the chassis, just behind the front axle. The motor is of 12 horsepower for a delivery van, weighing complete (empty) 900 kilograms (1,900 pounds), and is provided with two commutators.

The Schmitt batteries claim an efficiency of 85 per cent. at a 10 hours' discharge rate, and the makers state that their batteries have a capacity of 30 ampere-hours per kilogram of electrode.

A great deal of attention has been attracted by the one or two gasoline-electric cars, the chief exponent of which is the Kriéger company. This firm has now had this mixed type of car in the market for about a year, and is very emphatic in its statements that as good an efficiency can be obtained from a gasoline-electric drive as from the ordinary gasoline engine with change-speed and differentials. It will be remembered that in the states the General Electric Company is experimenting with this type of drive, and has recently gotten out an omnibus with a gasoline-electric combination.

Kriéger's stand includes several carriages of the usual battery type, and also a very resplendent and polished chassis fitted with the new drive. The motors are of 10 horsepower nominal output, geared to the rear axle as in the case of battery cars. The dynamo is mounted in the axis of the frame and is just below the driver's seat. It is of 24 horsepower nominal output, and can be worked at 30 horsepower without overheating. A commercial speed of 70 km. (43 miles) is guaranteed. The engine is a four-cylindered group, and magneto ignition is used, the engine being self-starting. It is coupled directly to the dynamo by an elastic coupling. The whole group is protected by means of an aluminum casing. The water circulation is by means of a thermo-syphon. The radiator placed in front of the car is also used as a reserve water tank. For ordinary running the motors are coupled in parallel and on grades the series running is resorted to. An electric brake is operated by a pedal, and the hand-brake can also be operated from a pedal. The use of two brakes does not shut off the current entirely. The self-starting apparatus is operated by a small battery, weighing 40 pounds, and is recharged automatically by the dynamo, thus requiring no care. The total weight of the car, complete for running, and with a capacity of four persons, is 1,200 kilograms (about 2,500 pounds).

The special advantages claimed for this type of car are silent running, with very small vibration, constant speed for mounting grades up to 5 per cent., excellent hill-climbing powers, owing to the well-known capacity of electric motors and generator to stand large overloads for even lengthened periods. In addition, there is the well-known advantage of absence of chains and transmission gearing.

Inquiry made of the firm of De Dion-Bouton evinced the fact that it was also experimenting in this direction, but had nothing ready for the present show.

Novelties in Accessories and Component Parts.

Especially Reported for THE AUTOMOBILE.

PARIS, Dec. 15.—If the number of novelties in accessories and component parts on exhibition at the Grand Palais bore any close relationship to the total number of such exhibits, a month's inspection and a record of impressions as large as a city directory would not cover the subject. As it is, however, while the exhibit is of immense extent, it does not contain many real novelties, and in fact, from the spectator's standpoint, is valuable more as a means of judging tendencies than anything else.

A complete day is not sufficient even for a superficial examination of what is on view, and the American visitor, after covering the immense galleries, is usually of opinion that there are several miles of stands. There is certainly more than one mile of aisle to be traveled, for the galleries comprise not only that portion bracketed over the main hall, along the sides and ends, but a great area of floor space partitioned off from the gallery proper, now running parallel with it and again jutting off into a complicated series of small halls and upper-story show places.

The "social" character of the 1904 show is emphasized by the comparatively little attention given the gallery exhibits in comparison with the constantly crowded condition of the lower levels. The finished cars attract the constant attention of the great mass of visitors, and to the fewer real enthusiasts and the trade is left the exploration of the miscellaneous exhibits. Perhaps, if the French understood the general use of elevators, the result might be different. There is no such stair-climbing device in the entire palace open to the public.

Remarkably Comprehensive Exhibit.

If the public interest in the accessories and fittings is not very great, that of the manufacturers themselves makes up for it, for the displays of every conceivable thing, from a coil of wire or a spark plug to a complete set of forgings or an aluminum body are remarkable. In keeping with the wonderfully comprehensive character of the entire exposition, the small exhibits include not only what are ordinarily understood as accessories, but anything and everything that is likely to be used, on the road or off, by the automobilist.

Model Bedrooms and Bathrooms Shown.

There is, for example, an immense exhibit of bedroom and bathroom furniture and fittings, each exhibit representing a complete room, with one wall (that fronting on the aisle) missing. All the furniture is in place, as it would be when in actual use. The carpets are laid on the floor, the paper prettily decorates the walls, and even the beds are "made up." Such an exhibit would be superfluous at home, for if our roads are bad, our country hotels are usually comfortably furnished, and, so far as accomomdations go, are far superior to the average in France. In fact, it is only in its cuisine that the little French hotel is at all bearable. Sanitary appliances are of the most primitive character.

For these reasons undoubtedly the exposition management decided to make a most complete exhibit of "what might be," so as to educate the taste of the public and of the innkeeper.

In this vast assemblage of little rooms there is much that is exquisite, more that is artistic, and that with full attention to comfort. The rooms are generally arranged in some attractive color scheme, with plain though well-designed carpets or rugs and wall papers—all recalling the Morris school. The furniture seems somewhat fragile, and either French tourists are not of great physical proportions or they are especially careful of their host's personal property. Nearly all of the woodwork is finished in enamel, doubtless so that it can be readily kept clean. The bath and sanitary fittings are usually of good design, and with a minimum of woodwork, either enameled iron or porcelain, though in a few extensive exhibits the old and unsanitary wood-encased bathtubs are shown.

One very neatly fitted bedroom is adjoined by a bathroom, separated by rubber sheeting, the floor of the bathroom being of narrow lumber, with good drainage spaces between, the wood gratings being easily removable. In this bathroom the shower descends directly onto the floor.

Automobile Lamps.

In the entire lamp exhibit there is shown in the better grades an almost complete adoption of the system of carrying the lens (bull's-eye) in a spider inside the lamp and behind the front glass, which is only a circle of thick plain glass. This system was adopted by the "Alpha" makers a year ago, but did not at that time attract very much attention. The construction has the advantage of keeping the condensing glass clean and out of the way of injury in case the front glass is smashed. An amplification of this system is shown by Ducellier in an expensive and immensely powerful "Catadioptric" lamp, which he claims will clearly illuminate the ground fully five hundred yards ahead of a car. In this the ordinary convex lens is placed concentrically in an accurately ground lens of the form of a hollow truncated cone, with its base beveled to a deep angle. The base is turned outwardly, the smaller end of the cone pointing toward the reflector. This lamp is constructed on optical principles such as are employed in lighthouse work, and is in a separate class from the common lantern. Both the glass cone and the inner condensing lens are carried in a very heavy brass spider, with four arms extending from and securely riveted to the inside of the lamp body. This form of lens gives a flattened beam of light, so that on approaching a curve the increased angle of light in a horizontal direction illuminates the road perfectly.

Another novelty at this stand is a large gas lamp of ordinary design, but with the body of oxydized brass, showing a dark metallic color, relieved by the brass bead at the front of the glass and the brass handle. It makes an extremely rich and "quiet" looking lamp, like the familiar artistic steel and gold watch cases.

Many makers show lamps in which the gas generating chamber is incorporated in the lamp body. Though a convenient system it is objectionable on account of weight, which on bad roads would tend toward the disintegration of the lamp. A very complete apparatus of the sort is shown by Bleriot, in a lamp which has a spherical back, the top of which opens up and discloses a quite complete gas-producing plant. There are two generators, one accumulator and a filter. All are cylindrical in form, with spherical tops and placed vertically in the containing box. It is the intention to use the metal acetylene cartridges with this lamp, so that all dirt and loose refuse is avoided. The ordinary lump carbide can be used, however, a copper vessel being provided for this purpose. One of the generators can be put in action at a time, according to the length of the trip contemplated. The gas passes from the generator to a little accumulator, which is automatically filled and serves to maintain a constant pressure at the burner, avoiding the use of rubber bags. On its way to the burner the gas passes through a filtering screen packed with cotton wool. The box containing the generators has a cooling tank in which kerosene is used. In one of his lamps Bleriot shows a cone of glass over the burner, which will not crack with the heat, and which, in case of one of the burner holes getting clogged, will keep the flame away from the silvered reflector.

Adjustable Lamp Bracket.

A simple and clever stunt at this stand is a lamp bracket in which the base of the fork is a flat plate in which the forks are bolted. They are bayonet shaped, and so can be turned in or out, accommodating the bracket to varying widths of lamp. Another accessory is a brass foot warmer designed to be piped in the water circulating system, and to be used to heat a closed car.

Variety of Forgings and Castings.

In the great variety of wrought and cast engine and car components one crankshaft was noticed in which the crank slabs had been milled on their edges, as though a key-seat had been cut, a clever way to reduce weight, provided that sufficient metal is left to give the necessary strength. Very complete exhibits are made by the steel concerns, including fractured specimens of various kinds of steel.

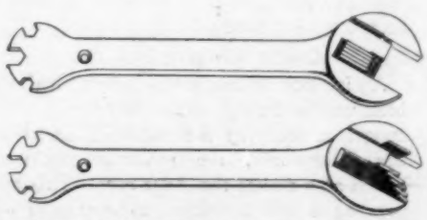
European makers seem to be not unfamil-

iar with the difficulty in keeping intact the glass in screens over the dash. A glass maker from Saint Gobain shows screens in which wire netting is incorporated in the glass, so that in case of fracture the glass is not scattered about. This closely resembles the well-known Pittsburg glass, except that it is perfectly clear. It would probably impose a strain on the eyes, however, to look through this glass continuously on a long run. A gas lamp is also shown with the same kind of glass in the front.

Oilers of Forced-Feed Type.

Not many original ideas are displayed in the construction of lubricators. The tendency is strongly in the direction of forced rather than gravity systems, using either rotary or reciprocating motion derived from the car motor to work the plunger pumps.

The only novelties exhibited by the house of Dubrulle, the well-known concern which has for such a long time been supplying the best European makers, are two apparatuses designed to establish not a mere dripping of oil into the working parts of the engine and transmission, but a regular circulation



FRENCH ADJUSTABLE SCREWLESS SPANNER.

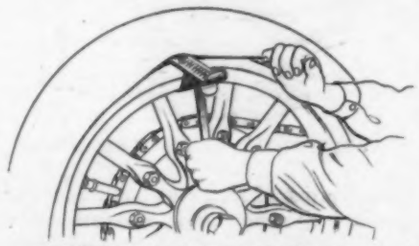
of lubricant; they thus follow one of the most marked tendencies of the year.

The first system is that by which an oil tank is fastened to a low part of the car, preferably under the hood, on the side member of the frame, for instance, and from which a plunger pump fastened in any convenient place, and driven by the engine, draws a supply of oil, which it conveys to the sight feed oilers on the dashboard, whence it goes to the different parts that are to receive the lubricant, and is returned by another pump to the tank. As the supply from the pump might be larger than that from the sight-feeds, a check-valve is fitted, with a return pipe to the tank, to avoid bursting the pipe, or at least causing the connection to leak.

A second system is made in which the entire mechanism is carried on the dash. This very much follows the lines of the ordinary Drubrulle oiler, the only difference being the return and the check pipes.

The advantages of these systems are evident, since they require no attention whatever from the driver, the lubrication starting and stopping with the engine, and as a large quantity of oil can be placed in the tank, there will be no need to stop an interesting touring run for the nasty and dirty job of attending to the lubricators. A very fine filter is interposed on the oil return duct to obtain an absolute separation of the liquid and solid parts of the contents of the crankcase.

A little refinement of detail noted here was the use of long needle points on the sight-drips along which the oil passed before dropping. When a car is run over bad roads this prevents the oil drops from

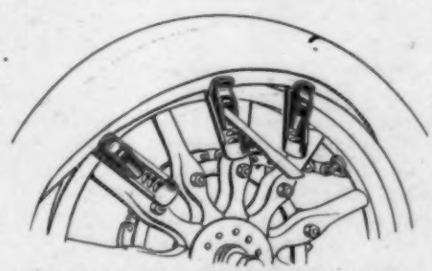


REMOVING SHOE WITH HELENA TOOL

splashing on the inside of the glass tube, and so preventing a ready observation of the rate at which that particular drip is feeding.

Illuminated Oil Feeds.

At the stand of Albert Lefebvre & Sons a sight-feed oiler with ordinary reservoir for fitting on the dash is shown, in which the sight glasses are placed in front of the oil box and illuminated by tiny electric lamps encased in the front of the box. By using a push button the driver can thus see the oil feeds at night, as the small electric lamps used give quite enough light for the purpose. This is a multiple pump oiler driven by a rotary motion. A cam shaft with triangular cams lies across the top of the reservoir, inside the cover, and is driven by a worm wheel. Each cam works two plunger pumps by contact with a plate covering the two plungers. Spiral springs give the return stroke. One pump takes oil from the bottom of the reservoir and empties it into a channel at the top, with openings into the tops of the sight-feed pipes. The feeds are regulated in the usual way by needle valves, and any surplus oil simply flows back into the reservoir. The sight-feed



REPLACING SHOE WITH HELENA TOOLS.

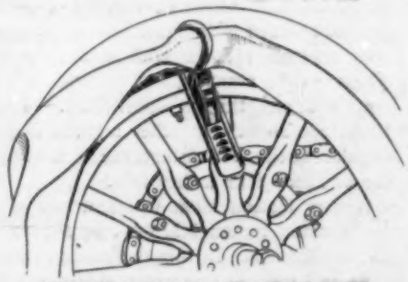
tubes lead down into passages connecting with the plunger pump chambers at the bottom of the reservoir. The inflow into each pump is set a little higher than the discharge opening, so that when the plunger comes down it automatically closes the inflow opening before forcing the oil through the outflow pipe. There are thus no separate valves in the entire pump, and there is no possibility of bursting a pipe by closing the feed, as stop valve is on the intake side of the pump.

At the same stand an ingenious form of adjustable spanner, without any screw, is attractive. In this, as the illustration shows, there are several thin plates hinged to swing into or out of the jaw opening, so as to accommodate the spanner to various sized nuts. It does not, of course, permit of the finest adjustments, but is a most excellent substitute for the spanner and washer or bit of sheet metal so familiar to machinists.

An Interesting Tire Tool.

The Helena tire tool, shown in the tire section, seems very nicely thought out, and ought to meet with a great success. The outfit, packed in a leather case, is meant to remove the largest tires without effort, and actual demonstrations seemed to show that this tool would make it possible for even a woman to remove the largest sizes of tires.

By means of a tool which is inserted between the bead of the tire and the edge of the rim, the tire is pulled off partly, without strain, a small lever expanding the tool by a ratchet action similar to that of a jack.



INSERTING VALVE AND INNER TUBE.

This action being repeated a few times around the wheel, the tire very easily comes off.

The operation is the same to put the tire on again, so that by the mere repeated play of the wrist on a short lever, the muddiest tire can be removed without being even touched, while a special accessory supplied with the tool allows of putting the inner tube in place without the least fear of pinching it between the edge of the rim and the tire.

The tool attracts a great deal of attention, which is deserved.

Refined Design in Radiators.

In radiators better design is displayed as to exterior form than in the past. French art has given a more pleasing appearance to the purely utilitarian lines of the Mercedes front, and various styles in which chamfered corners or curves are used to break up the "stiff" appearance of the original forms are shown. In the construction of the actual cooling portion the only novelty noticed was that of Loyal, which is simply a development of oldet ideas.

It consists of tubes of very small diameter, approximatively a quarter of an inch apart and of very thin material. These tubes are in horizontal rows of eight, twelve and twenty tubes, according to the size of the engine to be cooled, and they are soldered

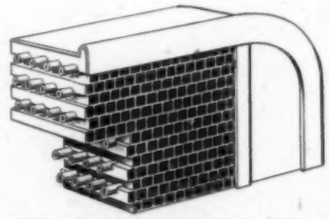
in place, after having first been inlaid between a sort of honeycomb system of square metallic flanges, as shown in the engraving herewith. When soldered up into a whole the system looks exactly like a regular honeycomb, but one should not believe that it has the same advantages. Although it is free from the disadvantages of the honeycomb—that is, it does not choke so easily, nor does it leak, unless unusual strains are put on it—it does not give the same fine division of the water, and thus does not give the same efficiency; besides, the water capacity of a square foot of this radiator should be much smaller than that of the same surface of honeycomb, consequently it is heavier and bulkier for the same amount of work performed. It should be borne in mind that in this radiator the tubes alone contain water, and the rest is a mere webbing of sheet metal to increase the cooling surface.

Lamps for Auto Boats.

Automobile boats receive attention from some of the lamp makers, who show neat and well made running lights and lanterns for such boats. Gillet Forrest & Co. exhibit red and green side-lights, having removable reservoirs fitted with wicks for oil. These can be removed and electric light or acetylene gas fittings substituted. These lamps are about ten inches high, and their angular backs, for fitting the side-boards, are of about four inches face.

A combination lamp which would serve for a small automobile boat is shown by Guichard & Co. In this the white "ahead" light and the red and green side-lights are combined in one brass lamp body. This is fitted for oil burning, with a single reservoir and three wicks with three separate reflectors, so placed that the rays from the separate glasses are kept quite distinct.

Marcel & Larrieu, of Suresnes, exhibit an aluminum body, including dash and hood for a single-seat car, in which there is not even a sliver of wood. This body is



NEW "LOYAL" FRENCH RADIATOR.

built up out of aluminum sheet and angles and is very symmetrical. The dash is of the "hollow" variety, a rather unusual form at the show.

An Electric Horn.

One of the minor accessories, and one which excites at least a great deal of curiosity, is the Colas electric horn. In this apparatus a push button of the ordinary type is placed in any convenient place, preferably on the steering wheel, and the mere pressure of the button causes the horn to sound. This result is obtained in the following manner:

A battery of accumulators supplies current to a set of electro magnets, under the influence of which is a soft iron blade carried by a steel spring. When the current is allowed to pass through the magnets by the push button this blade vibrates at a high rate of speed and emits a sound which a microphone collects. The current which traverses this microphone then goes to a vibrating plate attached to the small end of the horn. In front of this plate is a threaded part, on which any shape of horn can be screwed, so that one can use one's former horn. If the principle is very simple, it does not seem that the application of it possesses the same quality. The makers claim that it does away with leaky or dried-up bulbs, and that the old tube, which was always in the way, is done away with, wires being used instead.

A small accessory shown by an ignition apparatus firm, and one that the driver in trouble, because of loose strands of wire getting on the neighboring binding post, will appreciate, is a neat wire terminal. It consists of a piece of stamped copper plate, very much after the style of a large shoe eyelet. The wire, after having been twisted together, is looped around this eyelet, and a hammer blow given on the whole forms a neat eye, through the center of which passes the binding-post screw.

The Veeder odometer is well displayed in a fine exhibit of the French agents, and the apparatus in operation on revolving wheels always draws a crowd.

To even list the variety of articles exhibited would fill much more than a page of this paper, for it includes such articles as photographic supplies, oils, clocks, clothing, portable shower baths, automobile posters, carbureters, igniters and a thousand other articles. Some of the more important will be treated in subsequent letters.

Carow Ignition System.

An ignition system which hitherto had not been used in France is now employed in an apparatus made by the Société Industrielle des Telephones, the powerful company which also makes the Ader cars. This apparatus, which is shown in operation on several cars at the show, is somewhat on the lines of the American Bullock igniter, which was made long before the French device.

On an ordinary low-tension magneto is a contact breaker exactly similar to those em-

CHASSIS OF GARDNER-SERPOLLET 9-HORSEPOWER STEAM CAR.

Boiler at rear, fuel tank at center, water tank at dash, condenser in front, and four-cylinder opposed engine under pedals.

ployed on ordinary jump-spark machines, but instead of sending the current to a coil, it sends it to an igniter, which screws into the cylinder in place of the ordinary plug. This igniter, shown in section herewith, consists of an electro-magnet wiring *A*, the core of which is the small annealed iron rod *B*. When the current passes it goes from the screw terminal on top of the igniter to the core, from there to the winding, and from the winding to the body of the igniter through the central rod *C D*.

The action of the core when magnetized by the current is to attract the rod *C D*, which is also magnetized, and thus cause a spark at *D* by the positive break. As soon as the contact is broken the spring shown brings *C* back down onto *D*, and, the current flowing again, the same series of action is repeated until the contact breaker on the half-time shaft of the engine cuts the current off definitively.

Smith's Governing Carbureter.

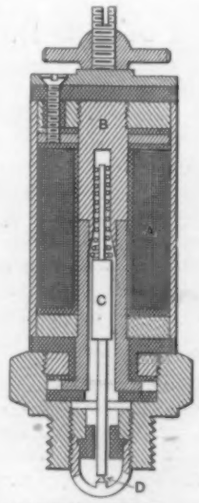
Another interestingly novel device used on the Argyll car is the carbureter invented by F. H. Smith. Its special features are an automatic pump for a positive gasoline feed, and a governor, also automatic.

The gasoline is admitted through a pipe 6, and filtered by the strainer 7, readily removed for cleaning, as it rises through the needle-valve to the float chamber, where it finds its level at the dotted line.

Projecting downwards into this chamber are the gasoline feed pump barrels 13. In these work the plungers 14. When the piston moves forward on the suction stroke it creates a partial vacuum in its cylinder and in its induction pipe 41. This causes a rush of hot air from pipe 23 through ports 19, up through holes in the disc 18, which is fixed to the pump plunger 14. This plunger has at its lower end a ball suction valve 15, and at its upper end the delivery valve 15^1. The lifting of the disc 18 lifts the pump plunger, which in turn discharges the gasoline from the annular space 16 through valve 15^1 and spray nozzles in cap 17. The quantity of gasoline per induction stroke of piston, as will be seen, is thus determined by the cubic contents of this space. This quantity, once correctly determined for an engine, and the oil employed, does not need and ought not to be varied. In order to allow of adjustment when fitted, or to suit another oil, a cam 21, actuated by a shaft 22, is provided. This cam forms the stop and determines the maximum lift of the pump plunger, and therefore the maximum quantity of oil that can be pumped per suction stroke.

A fiber buffer 20 brings the plunger to rest on its downward movement. The mixing chambers 5 are each directly below their respective induction pipes, and are warmed by hot air or water circulating around the jacket 2.

In each induction pipe is placed a separate governing device. This consists of a spindle 30 carrying a disc valve 31, held from its seat 34 by a series of springs 33 and 36. When the engine speed is low, the air rushing from ports 19 and 23 keeps pace with the piston, and there is little vacuum formed; but when the piston speed



CAROW IGNITER.

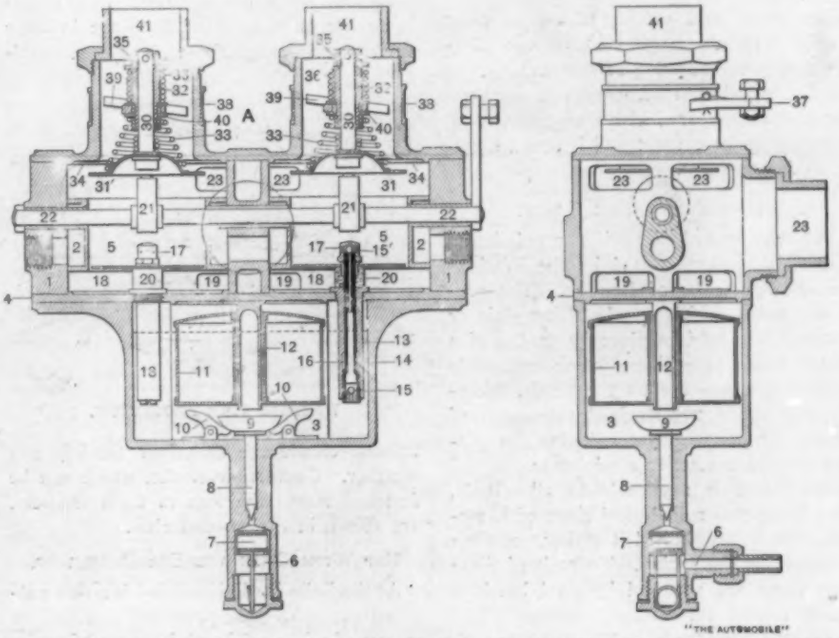
increases, the air is less able to flow in fast enough, and a partial vacuum is formed. As soon as the difference of pressure on the two sides of valve 31 is sufficient to overcome its inertia and counterbalance the pressure of the springs tending to keep it open, valve 31 will close on its seat, cutting off the supply of mixture. Once closed it cannot open again during that suction stroke.

The effect of this cut-out action is analogous to that of a trip gear on a steam engine, only a certain definite quantity of explosive mixture has been allowed to pass to the cylinder to do work. When, however, the speed at which the governor is set to act is not exceeded, the valve never closes, and the piston draws in its full supply of air, charged with its accurately measured quantity of gasoline. To control the speed at which this governing action begins, use is made of the throttling action of valve 31. If this valve be opened fully the air will pass freely into the cylinder, and there will be little or no difference of pressure on its two sides to tend to close it. If, however, it be not quite so fully open, there will be a great resistance to the flow of air and a greater difference of pressure, consequently a lower engine speed will be sufficient to create sufficient vacuum to make it close. An arrangement is therefore provided for varying the lift of this value off its seat, controlled by a lever in the steering wheel of the car. This consists of the lever 37 operating the sleeve 38, a pin in which passes through the helical slot 39. This pin engages with a groove in collar 40, on the valve stem. A movement of 37 therefore changes the amount by which the valve can open, and, in consequence, the speed of the engine at which the governor will begin to act. The levers 37 on each governor are coupled up to a common rod, so that each engine is cut out at the same speed.

A Novel Ignition Device.

One of the exhibits of the Hozier Engineering Company, of Glasgow, maker of the Argyll car, is the Simplex igniter, patented by A. McLeod, of London. The device embodies a combination of high-tension battery system and the low-tension make-and-break system; in construction a special spark-coil is attached directly to the plug.

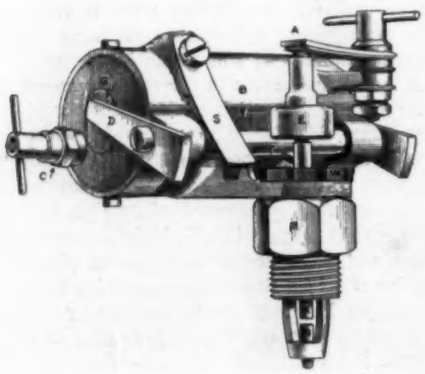
An eight-volt current from a battery is passed through a commutator, which distributes it to each cylinder in turn. Arriving at the plug terminal, the current passes



"THE AUTOMOBILE"

SMITH'S GOVERNING CARBURE ER IN LONGI UDINAL AND TRANSVERSE VERTICAL SECTIONS.

around a coil wound with a primary circuit only, and having in its center a coil of iron wires. Whenever the circuit is closed this wire becomes magnetized and attracts an armature set on a small rock-shaft. The spark plug is hollow, with a hardened steel point fixed at its lower end, while through its center a rod of about 1-8-inch diameter, also of hardened steel, plays freely. To the upper end of the rod, just outside the plug, a fiber disc is fixed; a lever or arm on the rock-shaft serves to lift the rod by contact with this disc, thus making a gap between



SIMPLEX IGNITION DEVICE.

A, Small spring. *B*, Case, aluminum, with single coil of insulated wire. *C*, Terminal to which connection to commutator is made. *D D*, Armatures carried on rock-shaft *R* and attracted by magnet *G*. *E*, Fiber washer on rod *K*. *G*, Core of iron wire magnetized when current flows in coil. *K*, Positive pole, taking current from spring *A*. *N*, Negative pole. *P*, Body of plug, threaded to ordinary hole. *R*, Rock-shaft. *S*, Spring acting on piece *X* and closing plug when current is broken. *T*, Armor trigger, lifting and turning rod *K*, by means of washer *E*. *X*, Bearing on rock-shaft for spring *S*, by which rod *K* is dropped when current is broken.

the lower end of the rod and the fixed steel point the negative terminal.

An important feature of the device is the slight rotary movement imparted to the rod each time it is raised, thus keeping the points clean and causing them to wear evenly. The advantages claimed are: Certain and complete firing of the charge, even with a weak mixture, easy starting, low first cost as compared with a magneto, small consumption of current and lessened liability to derangement.

Spring Frame Tire Guard.

The tire guard here illustrated is an English invention, owned by the Watkins Patents Syndicate, of London. The protecting bands, which may be either plain or armored, are held in place by means of a double series of springs, which constantly equalize the pressure on the bands, allowing a free and unrestrained movement of the tire proper, and yet reducing the surface of road contact to a minimum.

The device is applicable to all wheels, there being two rolled steel rings of L section, which are bolted together, one on each side of the spokes. To each of these rings there are attached by steel brackets twelve strong three-leaved springs. The bands are fitted with bolts, one for each spring, set up with wing nuts, so that a proper tension may be put upon the band, and an old band may be removed and replaced by a new one, or armored bands may be changed for plain ones. The armored bands are made with a non-slipping tread, which is a preventative of skidding. The set of four bands may be carried in small compass and applied in a few minutes if unexpectedly required by bad roads.

Foreign Novelties in Men's Clothing.

Special Correspondence.

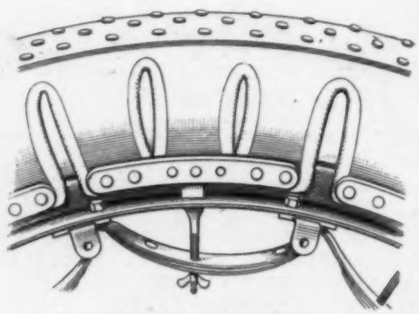
PARIS, Dec. 21.—Fortunately, or unfortunately, men's clothing is not very much interfered with by Dame Fashion, and this year's styles do not show any startling changes from those of last year. The same fur cloaks, waterproofs, leggings, caps and goggles which so effectively disguise the motorist from even his most intimate friend are again to be seen this season.

Cloak That Opens at the Back.

The Ström firm shows one style of cloak which is claimed to be absolutely new in idea. It is a garment having no opening whatever down the front. At the neck the cloak is fastened behind by a neckband having two long ends, one of which passes through a hole in the other, both being then brought to the front. One end of the cloak wraps over the other, the overlapping part being but slight at the neck, but increasing considerably as it nears the bottom of the wrap. This end is brought around to the side of the body and there attached by means of two buttons.

This new style of garment was originally designed for ladies who desired a wrap without any opening down the front, but objected to passing a sack over the head. It is now made for both men and women, either as a fur cloak or as a waterproof.

A handsome cloak also at the Ström stand is a full length garment made of waterproof cloth outside and lined with fox skin. A deep fur collar makes it a most handsome and warm garment. Rain cloaks in rubber or waterproof cloth are in large variety, and, together with the seaman's



WATKINS TIRE PROTECTOR.

helmet, enable the chauffeur to defy any weather. Convertible cloaks, which can be fastened round the legs to form trousers, are shown in various materials.

Cap With Chin and Ear Protectors.

At the Belle Jardinière stand is a new patented cap with chin protector fastened by means of clips and hood for protecting the back of the head. The ear clips, which are attached to the chin strap, contain springs between their two thicknesses of cloth, which cause them to roll up on themselves as soon as released. Thus, when not fastened down, they form a roll in front of the ear, protecting that organ from the wind without interfering with the hearing of the wearer.

Various styles of caps are shown with goggles attached, certainly a much more convenient arrangement than having the goggles separately. When not required, the goggles can be raised without any fear of them being lost. These caps can be obtained with goggles made to fit inside when not in use or to lie outside and be covered up by the chin band.

Lined Jackets and Leather Garments.

A useful article for motorcyclists is a jacket made of waterproof cloth and lined with chamois. It is double-breasted and has side pockets, and is both warm to wear and will turn a heavy shower.

A very useful outfit for either the motorcycle or automobile is a brown leather suit lined with flannel. The leather is very soft and pliable, and with the complete outfit of jacket, knickers and leggings the chauffeur has nothing to fear from the weather.

All the new cloaks and jackets are now made with vertical opening pockets, which are much more convenient for the hands than the old transverse pockets.

A comfortable legging shown on the Petit Matelot stand will ensure warm feet. It consists of a leather fur-lined leg with boot attached, but without any heel. Many styles of thick fur-lined waistcoats are exhibited, the use of which obviate the necessity in ordinary weather of so many extra outer wraps.

Light Waterproof Trunk.

A trunk which ought to find favor among motorists is shown at the stand of George Fils. It is probably the lightest trunk ever made and has the further advantages of being rainproof and dustproof. It is constructed of laths of cane interposed between two layers of cloth specially prepared and painted to make them rainproof and to prevent dust lodging on it. The cloth is not glued to the cane, but is woven through with it, thus making it impossible to tear away the cloth from the cane. Inside the trunk is a waterproof lining, and the lid closes down onto a beading of rubber tubing which makes the box absolutely dustproof.

AUTO BOAT RACES AT PARIS.

First Events Ever Conducted Within the Capital on the Seine.

Special Correspondence.

PARIS, Dec. 18.—The auto boat races held on the river Seine to-day (Sunday) had some additional interest from the fact that they are the first races of this nature ever held within the city boundaries. Although closely connected with the Salon, and run under the auspices of the Automobile Club of France, the races were not in any way official, the initiative having been taken and the whole organization carried out by one of the Parisian sporting papers. The whole Parisian press has taken an interest in the meeting, for fourteen press prizes were offered by as many different papers. The races were started and finished opposite the Serres, which is now being used as an annex to the Grand Palais, a few hundred yards below the new Alexandre III. bridge. The events included a run down stream of 12 1-2 kilometers and home, a total distance of 25 kilometres (15 1-2 miles) for cruisers, the racers doing two turns, 50 kilometres.

After a slight bend a short distance below the starting point, the river makes a sharp turn to the right about the middle of the course, forming a perfect U. For the first quarter of the course the river is within the city boundaries, the finish being at Suresnes, on the edge of the Bois de Boulogne. At no point is the Seine more than 120 yards wide, and, being spanned by eleven bridges of from one to four arches, minute regulations were necessary to insure safety. Fortunately the traffic on the river is not dense, consisting of a five-minute service of ferry boats in each direction and a few barges.

The cruisers were sent away first, at intervals of three minutes between heats, the hour not being changed when heats fell void. The racers followed later. The races had been much puffed by the organizers, and had created a great deal of local interest. Dense crowds, which have been estimated at 400,000 persons, lined the bridges and the river banks; but, from a sporting standpoint, the events proved to be of very meagre interest. Although a total of seventy-two entries appeared on the program, including seventeen racers, less than half this number came to the starting point, the racers being but six in number, as follows: *Titan II., Luzon-Hotchkiss Tréfle-à-Quatre, Hotchkiss, Nâ-pas-Pied* and *La Râpée III.*

The latter-named boat fell out immediately after the start. The Salon Cup was carried off by *Hotchkiss,* the winner of the Menier and Lucerne Cups, which was piloted by her owner, Henry Fournier. The second prize was also won with Hotchkiss engines, by Mr. Legru's *Luzon-Hotchkiss.* The *Trefle-à-Quatre,* winner at last year's Monaco meeting, and which is now sailing under British colors, came in third. Having been exposed at the Salon, she was only launched on the eve of the race, and her engines were not in good running order.

HOTCHKISS," WINNER "L'AUTO" CUP, GOING UP STREAM, GRAND PALAIS IN BACKGROUND.
The Hotchkiss engine in this boat is the same as the one in the Hotchkiss Ardennes Circuit racing car, and has ball bearings throughout.

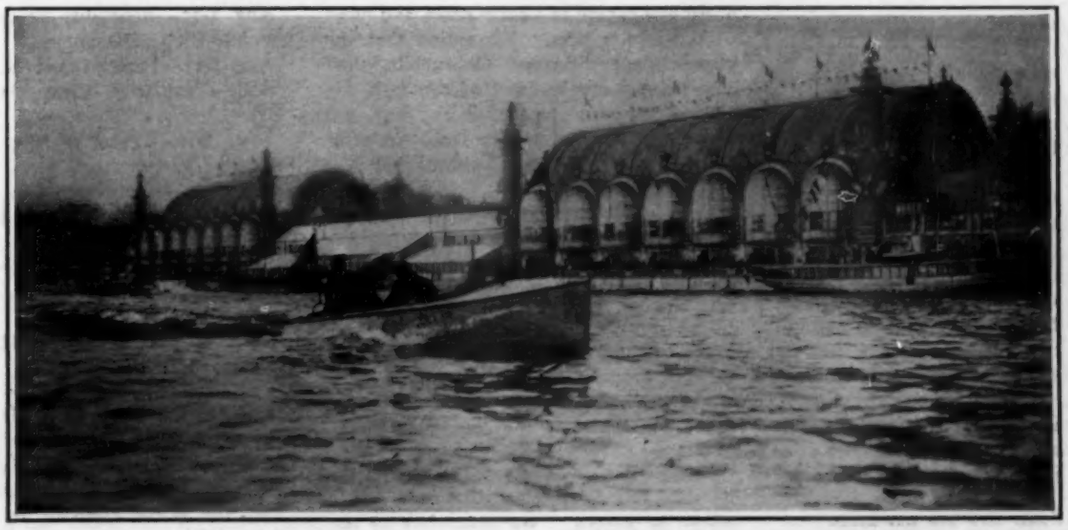
The times for the racers are:

BOATS FROM 8 TO 12 METRES.

1. *Hotchkiss* (Hotchkiss engines), owned by Mr. Henry Fournier: First round, 43:24 1-5; second round, 1:23:33.

2. *Luzon-Hotchkiss* (Hotchkiss engines), owned by Mr. Legru: First round, 49:01 2-5; second round, 1:42:17.

3. *Tréfle-à-Quatre* (Richard-Brasier engines), owned by Mr. Thuron: First round,



"TITAN IV," WINNER "LE MATIN" PRIZE.—THE SERRES (CONSERVATORIES) DE LA VILLE DE PARIS IN BACKGROUND.
This boat is fitted with a Delahaye engine and Claudel carbureter. Note committee barge behind flag.

41:13 4-5; second round, 1:44:11 2-5.

4. *Nà-pas-Pied* (Napier engines), owned by Mr. Kapferer: First round, 52:44; second round, 1:48:13 2-5.

In the class for racers from 6m. 50 to 8 metres only one boat started:

1. *Titan II.* (Delahaye engines), owned by Mr. Mestayer: First round, 1:00:30 1-5; second round, 1:58:35 1-5.

For the cruisers, of the fifty-five boats entered on the program, only twenty-one came to the starting line, and of these but seventeen finished the course. The cruisers were divided into two categories, and subdivided into ten classes, according to size and power, and in seven of the classes only one boat started in each.

OLDS EUROPEAN TOUR ENDS.

Old World Surprised by Successful 3,000 Mile Trip of American Runabout.

Special Correspondence.

PARIS, Dec. 21.—The Oldsmobile is back in Paris and Mr. Dertelle is the poorer by $20,000. It will be remembered that, as the result of a bet, Maurice Fournier and his chauffeur, Allary, set out on a tour around Europe in order to prove that the Oldsmobile runabout was something more than a car for city streets and well kept parks. The start was made in the Rue Richelieu, Paris, at 3 o'clock on the afternoon of November 19, and yesterday at 2:30 p. m. the little car re-entered the same street, after having accomplished a run of rather more than 3,000 miles. As, to win the bet, the car had to be back in Paris during the Salon—from December 9 to 25—Fournier finished his course with a few days to spare.

An even larger crowd had gathered to watch the return than was present for the start, and opposite the offices of *Le Journal*, where the course was finished, it was almost impossible for the omnibuses to make a way through the mass of people. A number of motorists, including some of the members of the Olds company now in Paris, and Mr. Dertelle, the loser of the bet, had gone out to the environs to meet Fournier and escort him in triumph through the city. After the finish had been officially noted and the health of all concerned duly drunk, the party went on to the Salon, where the little car was again enthusiastically received, and where it now remains on exhibition.

From Paris the route was to Bordeaux, where the tourists arrived November 21 at 5 o'clock in heavy rain. Owing to the bad weather they were unable to set out again the following day, and did not reach Toulouse until the 24th. Montpellier was reached on the 25th, whence they pushed on to Marseilles over very bad roads. There was an easy run to Toulon, which was reached on November 27, and on the following day the Oldsmobile was admired by the many visitors at Cannes and Nice. Menton was reached on the 30th, the weather being good.

On December 1 Fournier and his car entered Milan triumphantly, accompanied from Voltri by twelve Olds and twenty other cars. The roads to Verona, which was reached December 3, were very wet and greasy. A stay of one day was made there, and on the 15th the Oldsmobile entered Venice, accompanied by several members of the Italian Automobile Club and torrents of rain. On the 6th the Austrian frontier was crossed after several hours' delay and numberless formalities, and a visit was made to the Automobile Club at Vienna on December 8. On the 10th the town of Prague was entered, Mr. Dertelle being among the crowd that gathered to watch the car. On the 11th they were at Dresden, where they were detained a day owing to a heavy fall of snow, and on December 13 the car was in Berlin. A quick run was made to Cologne, which was reached on the 15th, and on the following day the travelers were banqueted by the residents of Strasbourg. On the 17th they were at Lunéville, and on December 21 were received in Paris.

Throughout the whole journey Fournier and his chauffeur suffered much from the cold and rain. On one occasion Fournier was so benumbed that he had to be lifted out of the car and carried into the hotel. The roads, too, were nearly everywhere in a very bad condition. While traveling through Italy the two motorists were locked up by the gendarmes and kept prisoners for several hours because a preceding motorist had been the cause of an accident.

The car which has accomplished this severe test is one of the standard type of Oldsmobiles taken from the stock at the Paris depot, being of 7-horsepower, with horizontal engine and chain drive, and fitted with Michelin tires. Excepting that the words "Tour d'Europe, Oldsmobile," had been painted on the front of the dash, the car had not been prepared in any way, and was not even fitted with a top. No parts whatever were changed throughout the voyage.

SPORTING DATES FIXED.

Long Schedule of Events Arranged by "Calendar Congress" at Paris.

Special Correspondence.

PARIS, Dec. 20.—As in past years, a number of conferences have been held at the Grand Palais during the automobile show, on matters of interest to motorists. A useful work has been performed by the Calendar Congress, held under the presidency of Baron de Zuylen. By agreement of the promoters of all the important automobile events, dates have been fixed upon for the important race meeting throughout France, which not only prevent clashing, but in some cases prove mutually helpful. For instance, several meetings on the Riviera have been fixed that sportsmen going south for one event can take part in succeeding ones without any loss of time.

Below are the approximative dates of the most important events for 1905:

Feb. 5-19.—Nice meeting.
Feb. 12.—Meeting of the Algerian Automobile Club.
Feb. —.—Reliability Trials in the Department of Seine and Oise (Versailles to Orleans district).
April 1-16.—Monaco meeting.
April 17.—The Provence Cup.
April 18.—Meyan Cup and auto boat races at Nice.
April 20.—Burton Cup at Cannes.
April 30.—Preliminary races for Motorcycle Club of France Cup.
May 1-15.—Mediterranean Cup.
May 14.—Motorcycle Club of France Cup.
May.—Preliminary Gordon Bennett Cup.
May 15.—Autoboat races at Juvisy, on Seine, near Paris.
June 1-15.—Automobile Club of Rhone District meeting.
June 1-7.—The Liedekerke Cup.
June 2-4.—Road races for motorcycles of not more than one-third of a litre cylinder capacity.
June 11-18.—Meeting of the Automobile Club of the North of France.
June 20-30.—Gordon Bennett race.
June 22-30.—Auto boats at Kiel.
July 2-3.—Kilometre and mile races.
July 2-10.—Exhibition and boat races at Rouen.
July 8-9.—Mont Ventoux meeting.
July 11-16.—Mont Cenis meeting.
July 15.—Calais-London race.
July 15-25.—First Ostend week.
July.—Ardennes Circuit: Herkimer Cup.
Aug. 1-7.—Rouen to Trouville auto boat races; Trouville Cup; Vichy meeting.
Aug. 1-15.—Reliability Trials of the Automobile Club of Dauphine.
Aug. 6-13.—Paris to the sea.
Aug.—Regularity Cup (Ardennes circuit).
Sept. 3-10.—Royan meeting (boats and motor cars).
Sept. 11.—Harmsworth Cup.
Sept. 1-15.—Lake Geneva, Lucerne and Evian meeting (boats).
Sept.—Mile race on the level and hill climbing.
Sept.—Florio Cup.
October—Chateau-Thierry Hill Climb.
October.—Gaillon Hill Test.

An action for damages alleged to have been received in an automobile accident was recently brought in an adjoining county. A woman had been thrown from a carriage, the horse attached to which was frightened by an automobile.

She landed in a ditch and was not dangerously injured. Upon being assisted to her feet, it is related, someone spoke of calling a doctor and suggested a physician who visits his patients in an automobile. The injured woman protested, saying: "No, don't call him. I don't want an automobile doctor. Get me a horse doctor."—*Observer*, Utica, N. Y.

A British Review of the Paris Show.

Conditions and Tendencies of Manufacturing and Marketing as Viewed by "The Engineer."

A REVIEW of the condition of the automobile industry abroad, in connection with the seventh annual show in Paris, is published in the current number of *The Engineer*, of London, and seems so apropos and to emphasize and amplify so well the observations of our own correspondents in Paris, and our deductions therefrom, that the article is herewith reprinted in full:

In making our usual annual survey of the progress accomplished by the motor car industry, as judged by the vehicles exhibited at the Paris show, we are first of all struck by the rapidly growing importance of this great automobile fair. It is, indeed, something more than a show or an exhibition, for while the general public crowd, at times, by tens of thousands in the huge Grand Palais, attracted by the art displayed in the arrangement of stands, and by the pleasing effects obtained with innumerable electric lights, there is an incessant stream of provincial and foreign visitors—the English and Americans predominating—who come to spend money on the purchase of cars. Unlike most other exhibitions the business done at this show is enormous. Orders for thousands of pounds are given out every day, and most of the leading firms seem to have sold forward their production for the coming year. The amount of business being done with foreign countries is one of the most encouraging features of the French automobile industry. The importance of this business may be estimated by the fact that the value of motor cars exported from France during the first ten months of the year was 60,839,000f., as compared with 43,849,000f. in the similar period of 1903, and with 26,537,000f. in 1902. On the face of it, therefore, it would appear as if the motor car trade were in a highly flourishing condition. Nevertheless, if we follow the fortunes of the industry through the entire year we shall find that this happy state of things is chequered by periods of deep depression, when the trade is suffering from all sorts of ills that are usually summed up in over production and financial troubles.

Periodic Trade Depression.

This difficult period usually begins with the end of August, when people have ceased purchasing touring cars, and lasts until the show; that is to say, for three full months. At that moment makers have filled their season's contracts, and must continue to manufacture to keep down working costs, with the result that a considerable number of cars are turned out during this period which can only be disposed of by sending them away to the English Colonies and foreign countries. So far as buyers nearer home are concerned these cars lose something of their value, owing to the fact that the new models will soon be on the market.

It can hardly be said that this question of over production affects the leading firms who have a universal reputation, for the cars will always command a good price, and the output is usually sold forward at the beginning of the year. But the situation is undoubtedly less satisfactory for that rapidly increasing class of makers who find at the end of the season that their profits are partly swallowed up by the large number of cars that are left on their hands.

Dangers of Heavy Capitalization.

It is here, also, that we can find some explanation of the financial troubles which have recently been hanging over the automobile industry. Seeing that the industry is of somewhat a precarious character for those whose position does not ensure their selling the whole of their production, it is evident that there is always a risk of the profit on the year's working being much less than would seem to be warranted by the margin between the cost of production and the selling price. When a firm's capital is small, there is always enough to be made to pay a fair return in the case of vehicles that meet with public favor, but the larger the capital, the more difficult it is to secure a satisfactory return, unless, of course, a concern increases its productive capabilities to meet a growing business. This is the case with every one of the firms who are doing a flourishing trade. In many instances companies have been created with big capital to build up a business, and some of them are now trying to raise further money to avoid difficulty. No branch of the engineering industry is more deceptive, or is calculated to give rise to more disappointment, than the manufacture of motor cars. At the same time, there is nothing capable of giving a bigger return upon capital than an automobile concern, subject to its first of all building up a sound reputation, and extending its manufacturing facilities without calling in any considerable outside financial support.

Commercial Drawbacks to Changes.

This somewhat uncertain character of the motor car industry must continue so long as makers are obliged to put new models on the market every year. The new types of car depreciate the old ones, or at all events render their sale more difficult, and thus the Paris show means that an enormous amount of capital, represented by a part value of the unsold cars, must be written off for depreciation. It is clear, therefore, that makers have every interest in seeing the cars reduced to a settled type. They will not only save the depreciation, but will avoid the expense of developing new models, which represents a no small item in working costs. Nevertheless, the fact that the motor car is not yet perfect induces the public to look for improvements, and the introduction of new features is a recommendation for the cars.

Despite the advantage which makers have from a business point of view to adopt what may be regarded as improvements, it is noticeable at the show that several of the big firms are exhibiting cars which are almost identical with their previous types. Even such as firm as Panhard & Levassor, which can hardly be accused of neglecting the smallest chance of improving its vehicles, is showing the same types of cars as last year, with the exception of a 50 horsepower chassis in which have been incorporated some of the features of the racing cars that have been running during the past season.

Approach to Finality of Design.

Makers generally are of the opinion that with the huge factories now in operation they are not justified in changing patterns which would upset the workshop routine, where each man has been accustomed to a special class of work, unless such change represents a real improvement, and therefore, as in the case of Panhard, one type of car only is introduced with the new features, which will have to receive the sanction of users before they are adopted on the other vehicles.

We have, therefore, arrived at a point where further progress in motor car design must necessarily be slow, and to this extent we seem to be reaching a period when the motor vehicle will settle down to uniform patterns. There is, of course, plenty of novelty at the show, for the fertility of the engineer in automobile construction is inexhaustible; but, seeing how the many apparently promising inventions of the past have had to give way to simple refinement of standard mechanism, it has become almost hopeless to expect that we shall see any further radical changes in motor car design unless something more can be done with the internal combustion engine.

We are no longer able to convey anything of interest in automobile engineering practice by giving a detailed description of the leading makes of cars. A description of one taken at random would apply equally to others, so far as general lines are concerned, and it is only when we come to look into details that we can discover any appreciable difference in design. It is solely in this critical examination of a car, to discover little points that may or may not be improvements, that lies the interest of the Paris show. Most of those firms who have regarded it as imperative in the past to break away from standard designs are now coming back to them again, and very little is heard of inventions which at previous shows gave promise of influencing the construction of motor cars.

Ascendancy of the Four-cylinders.

For cars of more than 16 horsepower, the four-cylinder engine has become paramount. There seemed to be every room for believ-

ing, a year ago, that the three or six-cylinder engines would become a prominent feature, the former especially being regarded as certain to replace the two-cylinder motor, but makers and users have come to the conclusion that if it is found necessary to employ three cylinders for the sake of getting a constant turning effort there is no reason why another cylinder should not be added to obtain still better results. The automobilist who has driven a four-cylinder engine will never return to a two or three cylinder motor. The bogey of complication has long disappeared with the simplifying of the engine, and an improvement of the ignition, while the facilities for locating ignition troubles and remedying them have made the four-cylinder engine just as convenient to handle as the two-cylinder.

Alcohol Carbureters and Motors in France.

The progress of France and Germany in the development of alcohol production and use as a substitute for gasoline in the arts, especially as a fuel for explosion motors, has been watched with much interest on this side by the many who look for an emancipation from the dangers of gasoline in cars and launches. The following report, from United States Consul-General Robert P. Skinner, of Marseilles, gives an interesting summary of the present situation:

"In spite of official encouragement, it may be said that alcohol motors and carbureters remain to-day incompletely developed. Many manufacturers have their particular form of carbureter, but I am informed that one device is in greatest demand; yet even of this type, out of 60,000 carbureters sold, only 500 were intended for the consumption of pure alcohol, all the others being destined for the use of gasoline or of carbureted alcohol. The sale of alcohol motors has been equally unimportant. Probably 100 petroleum or gas motors are sold to one alcohol motor, for three reasons: (1) The high cost of the alcohol; (2) the greater consumption per horsepower hour than of either petroleum or gas; (3) the difficulties arising from oxidation.

"The principle upon which the alcohol carbureter referred to operates is the same as of the carbureter for gasoline. These carbureters are manufactured for motors of from four horsepower upward; they differ from the form intended for use with gasoline, etc., in that the reheating system is more intense. They operate as regularly as the other carbureters. In their application to motors, their advantages and disadvantages are thus described to me: Additional suppleness in movement, but increased consumption as compared with gasoline; initial heating of carbureter necessary; possible oxidation of plugs, pistons, and piston rings, unless care be taken to run the motor with gasoline during the last moments of use.

"The motors operating with alcohol comprise two categories—stationary motors and motors of automobiles. Those of the first class are generally gas motors transformed by the simple addition of a carbureter and by some modifications of detail. The automobile motors are the same as those designed for the consumption of gasoline with another form of carbureter.

"A method of using alcohol has lately been tried, consisting of forcing the alcohol at a desired temperature through a vaporizer in a quantity strictly measured to meet the machine's need at the moment. At the last public competitions for a 6-horsepower motor the consumption was 410 grams per horsepower hour, as against 578 grams with the carbureter above referred to.

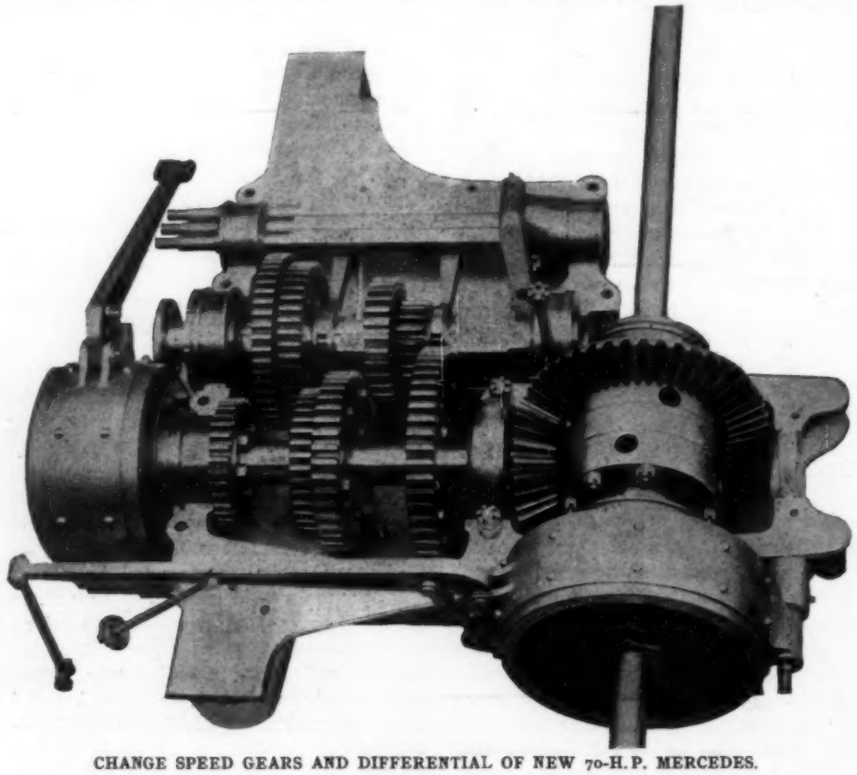
"M. Paul Barbier, president of the Technical Society of the Alcohol Industry, informs me that the use of alcohol at the same price as petroleum, and even at a slightly greater price, is more economical, since carburation of the alcohol when well done permits more complete utilization of calorific power than in the case of the petroleum products. M. Barbier adds that all motors operating on the explosion principle may be fed with alcohol if the construction of the cylinder, or rather of the explosion chamber, is modified. He says that injection carbureters and those operating upon the principle of vaporization and circulation give good results.

"The Minister of Agriculture prepared a report upon the competitions organized by his department in 1901-2, which contains considerable information on this subject. Nearly all manufacturers have fully realized that, owing to the different properties of gasoline and alcohol, the use of the latter liquid, if rendered not only possible but practicable, would offer certain real advantages in numerous cases, as, for example, in the merchant and military marine, where the use of gasoline is out of the question because of its danger. They have not worked out any system as yet, however, which seems to respond adequately to the various requirements."

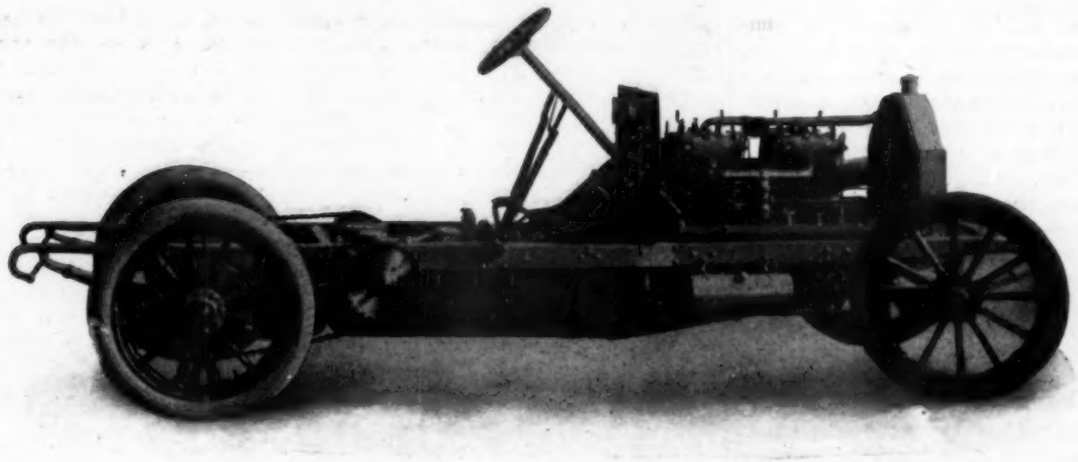
The 1905 70-H.P. Mercedes.

The Mercedes 70-horsepower car for 1905, the only one of the three new designs completed in time to be exhibited at the Paris Salon, is to some extent experimental, containing features which, if found satisfactory, will be incorporated in other Mercedes cars. In addition to this, there will be a 40-horsepower and a 28-horsepower machine, and a fourth may be added, an 18-horsepower car.

In the 70-horsepower car the motor has been equipped with ball bearings of the well-known Mercedes type, with springs and felt oil-pads between the balls. The cylinders are cast two and two, and there is a marked increase in the distance between the pairs. Heads, water jackets and valve chambers are cast integral, the valves being symmetrically placed with admission on the right and exhaust on the left. Owing to the fact that the valves have been increased in diameter, the lift has been cut down, and it has been found possible to obtain higher speeds, the maximum now being 1,400 instead of 1,100 revolutions a minute. A casing has been placed on the gears operating the cam-shafts, so that they now run in oil, and are of bronze instead



CHANGE SPEED GEARS AND DIFFERENTIAL OF NEW 70-H.P. MERCEDES.



CHASSIS OF MERCEDES 70-H. P. CAR FOR 1905, SHOWING LARGE DUSTPAN.

of bronze and fiber, additional strength being thus obtained as well as noiseless running. The location of the water pump has been changed, this being necessitated by the placing of the cam-shaft gears at the front of the motor. A rotary valve, somewhat on the order of a butterfly valve, has replaced the familiar Mercedes plunger valve for the throttle, and is found to give excellent results. Uniform temperature of the carbureter is maintained by means of a heating jacket. A foot-operated throttle is another new feature, and is used in addition to the throttle lever on the steering wheel. This is called the "Jenatzy accelerator," and when fitted to racing cars is operated just the reverse of the way it works in touring cars, that is, the pedal is pressed down to *decrease* the speed of the motor. When the motor is to be started, a relief device is brought into play, slightly raising the exhaust valves and decreasing the compression sufficiently to make it reasonably easy to crank the motor.

Lubrication is accomplished in a manner that is new to the Mercedes cars. A force-pump driven from the motor automatically delivers the correct quantity of oil to the principal frictional points, and stops the supply when the motor is not running. Ignition current is furnished by a magneto, placed on the left hand side and operated by the exhaust cam-shaft, its protected position in a recess in the crankcase being a strong point in its favor. The bronze ignition gears are encased and run in oil. The cap on the water tank can be removed without burning the fingers when the radiator is hot, and a better arrangement of the gasoline filling inlet has been adopted. In former Mercedes cars the muffler has been placed across the frame; in the new machine it is lengthwise, the idea being to reduce the back pressure.

An ingenious arrangement is an automatic sprag, operated by a friction device, which keeps it clear of the ground as long as the car is moving forward, but drops the instant a backward movement begins. The movement of the reversing lever throws the sprag out of operation, so that it does not interfere with moving the car backward when desired.

Three lengths of wheelbase are supplied, depending upon the style of body to be used. The shorter measures 86 1-2 inches; the medium 94 1-2 inches; and the longer 102 1-4 inches, the tread in each case being 58 1-2 inches. When a long frame is used the gear box and differential case are separate, but connected by a rigid sleeve. In the short frame both are enclosed in the same case. The sprockets on the countershaft are of the solid web pattern.

AUTOMOBILES IN BOGOTA.

"The first automobile made its appearance upon the streets of Bogota last week, and the excitement was unparalleled," wrote Alban G. Snyder, United States Consul General at Bogota, Colombia, under date of October 24. "Crowds have blocked the highways for squares, rendering traffic almost impossible, and great interest has been aroused as to the possibilities that this mode of transportation may offer in the future.

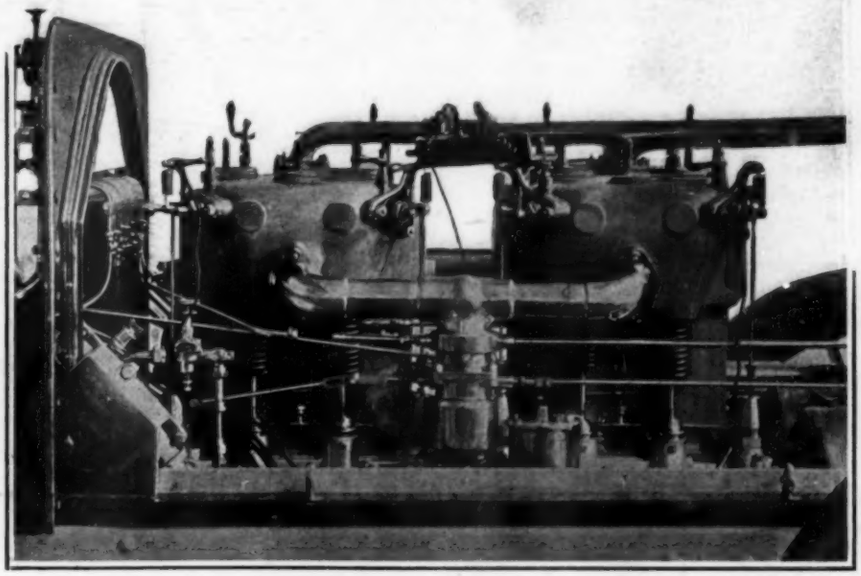
"This automobile is an American machine, and some business may result from the present enthusiasm. I shall be pleased to receive catalogues from automobile manufacturers of the United States for filing in the reading room here.

"It is rumored that a concession is shortly to be given to a transportation company for the exclusive use of the Camboa road, which leads from the upper Magdalena River to Bogota. Automobiles are to be used exclusively by this company."

Teacher to class "Blond": "What is a muffler?"

"Blond" looks up and down the long row of grinning chairs and students; no help in sight; the life line trembles on the wave; no one offers to pull her in. At last she ventures: "A muffler is that part of an automobile which is an argument no woman cares to meet."—*Chicago Post.*

An automobile repairer was doing some work in the northwestern part of this vicinity last week.—*Telephone,* Nora Springs, Ia.



INLET VALVE SIDE OF NEW MERCEDES ENGINE.—Note valves are on the sides.

A House on Wheels.

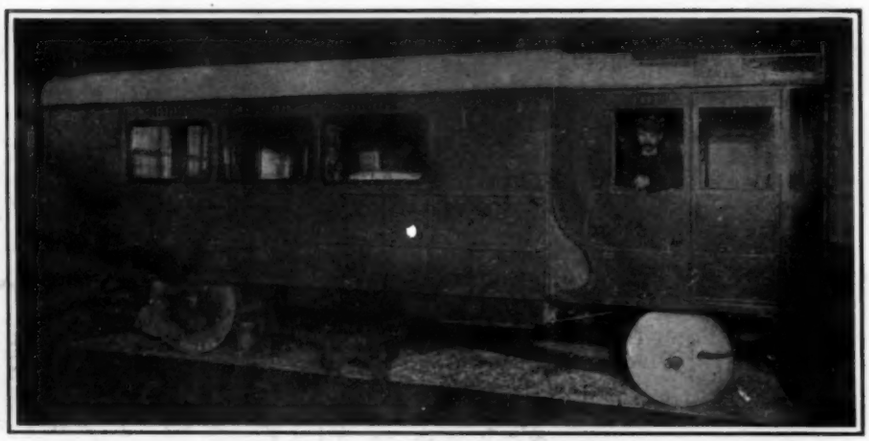
Special Correspondence.

PARIS, Dec. 23.—There is at present, in one of the large Parisian garages, a huge automobile that can best be described as a house on wheels. Its owner, Monsieur Lecretat, a Bordeaux gentleman, made the journey from that town to Paris in order to visit the Automobile Salon, covering the distance of 375 miles in three days, living, eating and sleeping entirely in his car. He has thus solved the problem of automobile touring without the aid of hotels.

This car, the only one of its kind in existence, is 23 feet long by 8 feet 2 inches wide, and has somewhat the appearance of a railroad car. It contains three rooms —in the fore end the chauffeur's room, from which the car is driven; in the center a living room, and at the rear a kitchen. The whole is mounted on four solid wood wheels, with iron tires, and suspended on semi-elliptic springs, 6 feet 7 inches long at the rear, and slightly shorter at the front.

The chauffeur's room is an airy little apartment 8 feet 2 inches wide, 6 feet 7 inches long, and 6 feet 2 inches high, lighted by two windows at each side, two corner windows, and three windows in front, all letting down into pockets, and having a door at each side. The engine, a 24-horsepower two-cylinder Panhard, is attached to cross members in the front of the car, and occupies a portion of the chauffeur's room. It is enclosed under a metal bonnet, easily removable, the top of which is used as a table. Just to the right of the bonnet is a fixed armchair for the driver of the car, with ordinary steering wheel in front and the usual clutch and brake pedals. The brake power is very great, consisting of a brake on the differential, two brakes on wooden drums on the driving wheels, and a block wagon brake for each wheel; the latter by a special mechanical contrivance are made to drop on the ground and act as a wedge behind each wheel, effectively preventing the car running backwards. Transmission is by means of a shaft from flywheel to the clutch blocks, placed a little further back than the center of the chassis, just behind it being the sliding-pinion change-speed gear, and the differential, the car having ordinary chain drive.

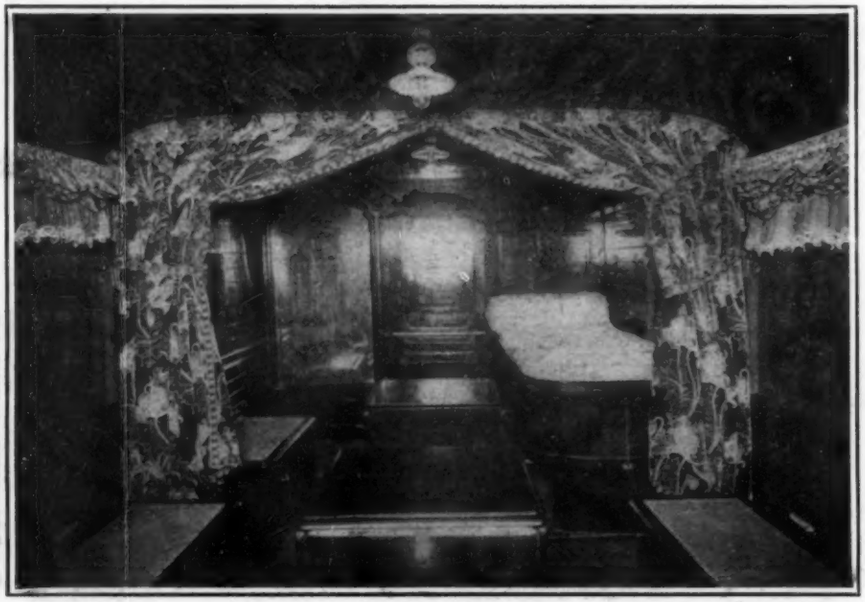
There are four speeds forward and reverse, and though the average speed of the car is only eleven to thirteen miles an hour, in summer, with larger sprockets, it has done nineteen miles an hour. Despite its great size and weight—5,000 kilos (11,000 pounds), in full running order—it is a remarkable hill climber, taking 10 per cent. gradients without any difficulty. The gasoline tank and radiator are both on the fore part of the roof, which at this point is somewhat lower than the rest of the car, in order to allow of luggage being placed on the top. The gasoline tank is 6 feet 7 inches long by 1 foot 8 inches wide, and has a capacity of 22 gallons; a tap is fitted at each end to supply the carbureter, this being necessary, in order that a supply may be assured even when the car is tilted over on sloping ground.



AUTOMOBILE HOUSE THAT TRAVELLED 375 MILES IN THREE DAYS TO PARIS SALON.

The fittings in the chauffeur's room consist of two substantial embossed leather folding chairs, and a folding bed. When closed up the bed forms a small leather upholstered seat. A second bed is fixed across the room when a man servant is carried. A sliding door, with a plate glass panel, on which is engraved a figure of the owner's racing automobile, leads into the main room of the car, an apartment 13 feet long, 8 feet 2 inches wide, and 6 feet 7 inches high, lighted by three plate glass windows on each side, all letting down into pockets. A folding curtain across the center of the room can be let down in order to convert it into two separate bedrooms. In the four corners of this room are handsome wardrobes with mirror fronts which, on being opened out, form four beds, being supported at the foot by swivel brackets attached to the wall. For each bed there is an ottoman with cane top and fitted with drawers of such a size as to fit under the bed when this is opened out.

Down the center of the room are two fixed square tables with a space between them, which can be fitted up by a leaf to form one oblong table. On lifting up the tops of these two tables they are instantly transformed into complete washhand basins with large mirror, water supply and discharge. The central leg of each table is fitted with lockers to contain all necessary toilet requisites. There are two electric lamps in the ceiling of the car, allowing one for each bedroom when the center curtain is lowered; and on lifting up some of the floor boards access is had to a large linen chest. All the furniture is of mahogany, the interior woodwork of the car being of American walnut. A sliding door similar to the one from the chauffeur's room to the main room, and bearing



INTERIOR OF HOUSE CAR, SHOWING FOLDING TABLES, BED, SETTEES, AND LIGHTS.

on its panel an engraving of the owner's favorite dog, leads into the kitchen. This is a cabin the full width of the car, and 3 feet 4 inches long, serving as an entrance to the vehicle by means of a glass-paneled door with a step made to turn automatically under the car when the door is closed.

The kitchen contains on the right-hand side of the main doorway a complete cooking range with coal fire and gasoline stove, with a capacity of .45 gallons, enough for seven hours' cooking. An extra chimney is carried to fit above the short permanent chimney when the car is in more or less permanent quarters. On the left-hand side is a linoleum-covered table with fresh-water tank, containing 22 gallons of water above it; tumbler-rack immediately below, and filter in one corner. Under the table is a cupboard fitted for plates and other table utensils. In the floor are two lockers, one containing a set of pans, and the other two batteries with sufficient capacity for lighting the car for 100 hours. A number of lockers are fitted under the car, available from the outside; one of them will hold 150 bottles of wine, another is reserved for canned goods, and a third is specially ventilated for soiled linen.

The entire car is covered with a thin metal sheath, and between it and the woodwork is a layer of cork which acts as a non-conductor of heat. In summer the glass windows can be lowered and the metal windows raised, and as they have ventilators the interior is kept cool and safety is assured. The whole of the front of the car, giving access to the motor, can be opened out, greatly facilitating adjustments. When closed up at night the car has almost the appearance of a fortress, for the door is with difficulty distinguished, the only step to mount into the car being hidden.

Last summer the car traveled very extensively in Touraine, Normandy, Brittany and Lavoie without any mishap whatever; and, though the owner is about to sell the vehicle, he will build another on rather improved lines. All the car, with the exception of the motor, was built by Lafitte & Cie of Bordeaux.

Crude Rubber in Germany.

In the course of a report on the present depressed condition of the rubber industry in Germany, U. S. Consul-General Frank H. Mason writes as follows on the general subject of the world's rubber supply:

"In respect to the increased cost of crude rubber, the facts are the same here as elsewhere. The standard grade of Para, which cost in 1902 about 57 cents per pound, is now quoted at about $1.19, so that within two years the cost of raw material of the best grade has more than doubled. It is asserted here that the enhanced cost has not been due to a diminishing supply, for, on the contrary, thanks to more intelligent methods of tapping and gathering the gum, as well as to improved means of transportation from remote Brazilian forests and the planting of rubber trees in various countries, the production of crude gum is now slowly increasing. The German rubber manufacturers charge that the high cost of crude caoutchouc is due almost wholly to manipulation, especially in England, where a few powerful firms are able to control the supply and fix prices for the whole of Europe.

"The teachings of the situation, as interpreted by the press, are that German manufacturers should strive to emancipate themselves from the English caoutchouc market by establishing direct relations with original sources of supply, and should use all their influence to encourage and promote rubber cultivation in Africa and other countries, where the trees, although not indigenous, are found to thrive and produce satisfactorily under skillful management. This, of course, is at best a remote and uncertain measure of relief, but until the cost of raw cautchouc can be reduced to something near the rates of two or three years ago, it is difficult to see how the German rubber industry is going to recover its normal prosperity."

New Michigan Cars.

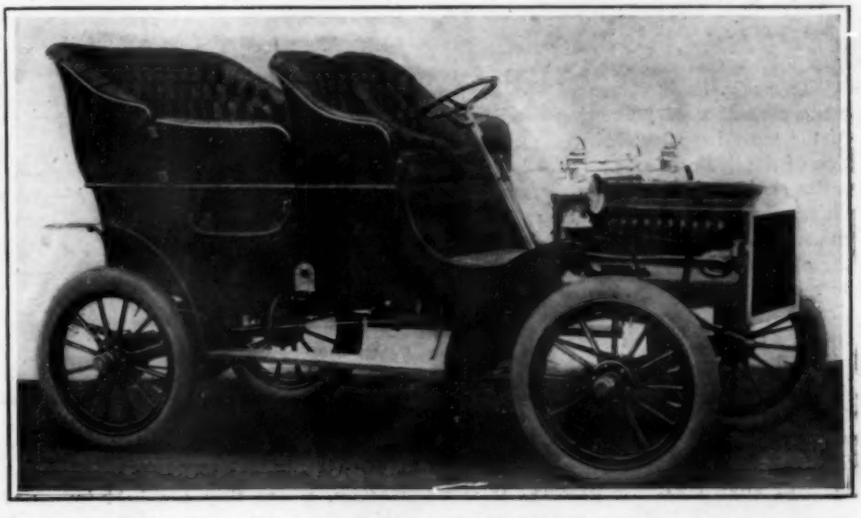
Two models of Michigan automobiles, designated as Models D and E and having the same general features, will be built for the season of 1905 by the Michigan Automobile Company, Ltd., of Kalamazoo, Mich. The motor, transmission, axles, steering gear, springs and wheels are alike, and are similar in most respects to those used in the 1904 car. Owing to the fact that the motor has developed 14 to 15 horsepower on the testing stand at 1,000 revolutions a minute, it has been decided to rate it at 14 horsepower, instead of 12 horsepower, as was originally done.

No change has been made in the construction of the motor except in the crankshaft bearing next to the flywheel. This has been split and made adjustable, so that wear can be taken up with a spanner, no dissembling of the machine being required. The motor has double opposed cylinders and mechanically operated valves and is water cooled, the water jackets and heads being cast integral with the cylinders. The bore is 4 5-8 inches and the stroke 5 inches.

Instead of enclosing the differential in a closed housing, a three-pronged yoke is used. This gives ready access to the gear for oiling, and also makes it easier to get at the differential brake. Improvements have been made in the muffler, the 1905 model being larger than that of the previous season and made of Shelby seamless steel tubing.

The frames are of angle steel, while the front axle is of steel tubing 1 3-4 inches in diameter with 3-8-inch walls. Full elliptic springs of a special grade of steel are used all round. Both models have bonnets of the French style, under which the water and gasoline tanks are disposed. The front of the bonnet is occupied by the radiator, which consists of seamless copper tubing with spiral radiating flanges, placed three rows deep. The wheelbase of Model D will be eighty inches and that of Model E eighty-six inches longer, but both models have 30-inch artillery wheels and 3 1-2-inch tires. Model D has a light detachable tonneau, while Model E is a full light touring car with side entrance. Front seats are divided. Lubrication is effected by means of a Hill precision oiler, and the carbureter will be either Shebler or Kingston, as ordered.

A device which would be greatly appreciated in this country just now is applied to an English car, the Eagle. The circulating water is piped from the cylinders to a special set of flanged radiators under the floor of the car, and from them to the main radiator in front. A most efficient footwarmer is thus provided without extra trouble. The makers are prepared to fit the attachment to any car.



MICHIGAN MODEL E, 14-H. P. TOURING CAR WITH REGULAR BONNET OVER TANKS.

The New Ardsley Touring Car.

BEFORE commencing to build a high-grade automobile it is usually considered necessary to provide a plant of tools and machinery for manufacturing practically every part of the car, and manufacturers invariably take pride in stating that no "stock parts" are used in their machines, when such is the case. Cars built or "assembled" from stock parts supplied perhaps by several different manufacturers are not, as a rule, included in the category of strictly high-class cars. It is therefore somewhat surprising to find a designer who has drafted and built a car, or rather, assembled one, mainly from stock parts, and who maintains that his machine not only needs no defending but possesses many points of superiority over not a few "one shop" products.

W. S. Howard, of Yonkers, N. Y., has designed a 30-35-horsepower touring car composed mainly of stock parts, assembled it with the aid of a ridiculously small equipment, considering the work turned out, and, finding the result satisfactory, is putting through a lot of twenty-five similar cars, to be followed shortly by another lot of fifty.

Although the Ardsley, as it is called, is an "assembled" car, many of the stock parts from which it is constructed are of special design and made to order, and are so incorporated as to form novel combinations, so that the car, as a whole, gives the impression of being especially designed and built in one shop. Probably the most noticeable thing about the machine, when running, is its lack of noise and vibration. Running at low or moderate speeds—say up to about fifteen miles an hour—it is impossible to detect any sound beyond that of the vibrator and, by intent listening, on a smooth road, a slight swishing in the engine. As the speed increases, the exhaust from the muffler gives out a continuous low hiss and the swishing in the motor increases slightly, but the buzz of the vibrator is the only distinct sound at any time. Vibration is also conspicuously absent at all speeds.

Removable Driving Axles.

The mechanical features of the car include a number of interesting details, one of the most important being the construction of the live rear axle. Drive is by propeller shaft and bevel gears, the gears and differential being enclosed in one housing, as usual. The road wheels are driven from the outer ends of the hubs by means of a sort of castellated cap. Each half of the live shaft has its ends squared, one end entering a square hole in one of the gears of the differential, and the other end entering a similar hole in the castellated driving cap. The tubular outer axle or casing, which is strongly trussed, supports the entire weight of the car, relieving the live shaft of all but driving stresses. It is a simple matter to unscrew the bronze dust-cap from the hub, remove the castellated driving cap, which slips easily from the end of the shaft, and draw out one-half of the shaft itself. This squared shaft idea is carried out wherever possible in the car, and while giving a positive drive, makes easy the dissembling of the parts.

Bolts Relieved of Shearing Strains.

Another idea is to take all shearing strain from bolts and at the same time make it easy to remove them, if necessary. In the case of a flanged shaft coupling, for instance, the bolt holes in the abutting faces of the flanges are counterbored and washers are fitted in the recesses thus formed. When the flanges are abutted the plates just fill the recesses, half in one flange and half in the other, and take the torque instead of allowing the bolts to take it. There is thus nothing for the bolts to do except to hold the parts together.

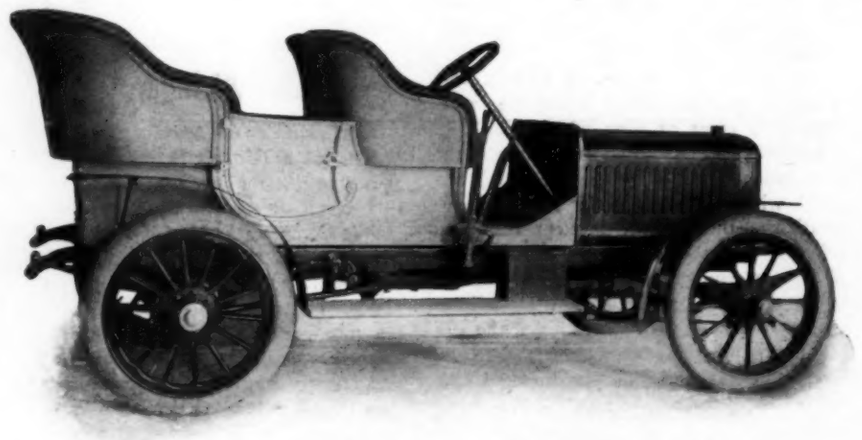
Lubrication of the transmission shaft bearings is independent of the lubrication of the gears themselves. The shafts have ring oilers, the oil being carried in pockets or "cellars" formed in the casing below the bearings. These shafts run in tool steel bushes, hardened and ground. Where the shaft does not project, the bush is made in the form of a cap with a closed end. The shafts are case-hardened and ground on the bearing surfaces.

The frictional surfaces in the expanding ring brakes in the rear hubs are formed of blocks of hard maple wood set in recesses in the steel rings which form the bands, with the grain of the wood radial to the center of the ring. This material has the advantage of being almost unaffected by oil; is noiseless and strong in action, giving a good grip, and does not wear the metal braking surface appreciably. It is also easily renewable and inexpensive. Any other material may be used by removing the wood blocks and fitting others in the recesses, where they are held by screws which are under no strain when the brake is applied. The emergency brakes are not automatically equalized. They are operated by the usual hand lever, through a rigid cross shaft which extends through a tube to stiffen it, bell cranks on the ends of the shaft oscillating the double cams by which the rings are expanded. Adjustment is made manually by means of threaded rods clamped in the main rods by split lugs, nuts and bolts.

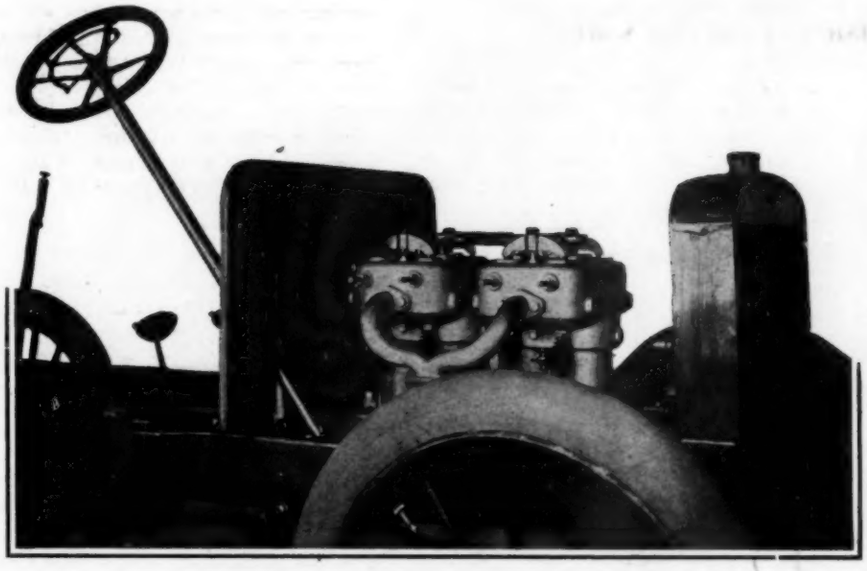
Follows Foreign Practice.

Generally speaking, the accepted foreign methods of construction are followed in the Ardsley car. The frame is of pressed steel, 146 inches long over all, the side members being 4 inches deep and 1 1-2 inches wide at the centre. The spring hangers are of unusual length. They are of channel form where they fit into the channel of the frame and are tapered to match the frame into which they are secured by hot riveting. Machined steel studs, projecting at right angles from the hangers, are used for bearings for the shackles, making a very neat arrangement. Pressed steel of channel section is used for the cross members. All corners are braced by gussets formed integral with the cross pieces instead of being separate plates riveted on. The corners of the front and rear cross-members are additionally re-enforced by the ends of the spring hangers, which are bent at right angles and riveted to the cross-members, adding materially to the stiffness of the frame. The cross-member just behind the motor, which is of heavy material and deeply dropped, is the only portion of the frame that is bent hot, all the others being cold-pressed.

All the springs are semi-elliptic, the rear ones being 48 inches long, with eight leaves, and the front ones 44 inches long with seven leaves. They are all 2 inches wide. The front axle, which is of steel tubing with walls 5-16 inch thick, is dropped in the centre. It is likely that an axle of I-section will be used in future cars. Reversed Elliot knuckles are used—that is, the fork is attached to the hub and the pivot to the axle stub, the reverse of the regular Elliot arrangement.



ARDSLEY 30-35-HORSEPOWER TOURING CAR, WITH SIDE ENTRANCE.



INLET SIDE OF ENGINE AS MOUNTED IN THE ARDSLEY.

The steering gear consists of a combination of screw and nut, and rack and pinion, an eccentric adjustment being provided for taking up wear, so that all lost motion can be avoided. A spring-cushioned joint is provided at the end of the connecting rod. Artillery wheels, 34 inches in diameter front and rear, run on balls and are fitted with 4-inch tires. Heavy steel tubes, tapered toward the hubs, are used for the rear axle casing, being pinned and brazed into the cast steel differential gear casing in the centre. A heavy steel truss rod passes under the differential casing.

Motor Control System.

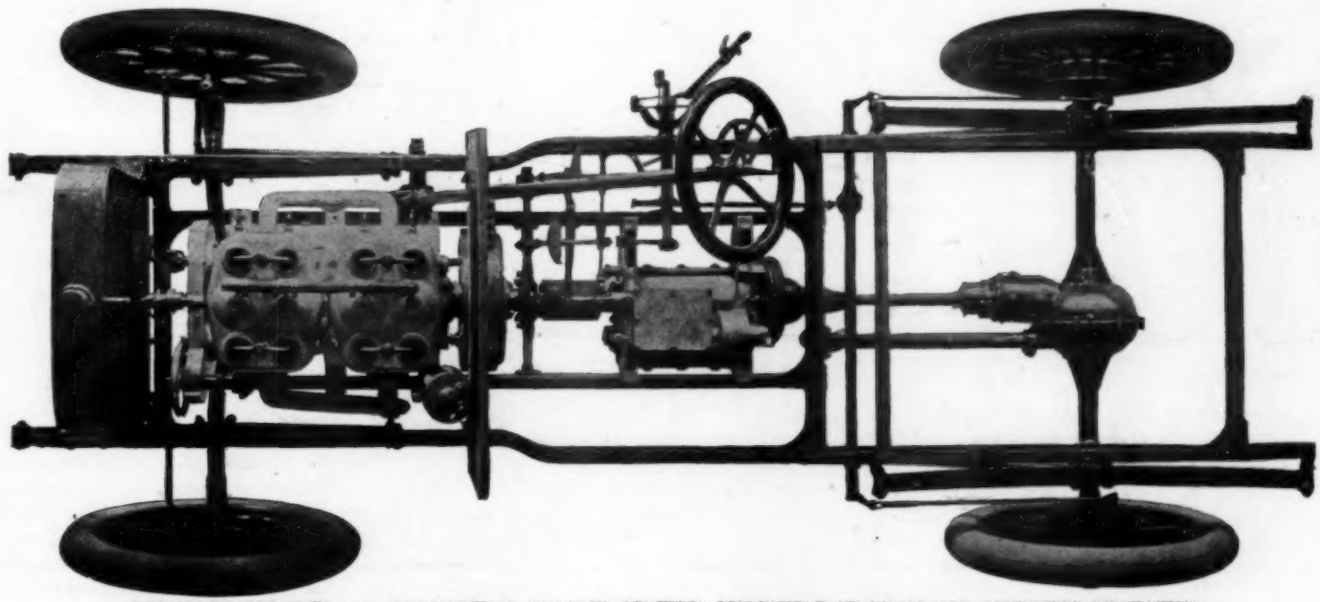
The four cylinders of the motor have a bore of 4 5-8 inches and a stroke of 5 1-4 inches. It is rated at 30 horsepower at 900 revolutions per minute, a considerable increase of power being obtainable by increasing the speed. Control is effected by spark and throttle levers, placed on the top of the steering wheel, and by a pedal-operated accelerator. The latter works on the throttle and can increase the speed only above the point at which the hand throttle is set and then drop back to the same point. A peculiarity of the controlling handles is that they do not turn with the steering wheel, but remain stationary, and the handles are so arranged that both are on the centres of their sectors when the motor is running at a moderate speed.

The specially designed carbureter is automatic in operation, depending for its action upon the different velocities of two opposed currents of air, one the main air supply and the other the auxiliary opened by the throttle. As the strength of the auxiliary air current increases, it partially neutralizes the force of the main air current and prevents the latter from taking up an excessive amount of gasoline. In a trial the carbureter worked perfectly; the motor was run in a closed room at all speeds, from the slowest to out-and-out racing, and at no time was there any noticeable odor or smoke from the exhaust, though the trial was continued for some time. The same was true when the car was put through its paces on the road, whether running on the level or climbing grades.

The Valve Mechanism.

The cylinders are cast in pairs with integral heads and water jackets. No openings are left in the tops of the combustion chambers. Bronze plugs fill the holes in the tops of the water jackets. The valve housings and their water jackets are also formed integral with the cylinders, being symmetrically arranged with the exhaust on the left and the inlet on the right. A single pipe leads to each pair of inlet valves, and the exhaust is similarly arranged. The inlet valves are mechanically operated and all valves and their gearing are exactly alike excepting, of course, that the inlet and exhaust cams are differently shaped. Valves are 2 1-8 inches in diameter of nickel steel, annealed during machining to avoid warping under heat. A peculiar arrangement of the exhaust valve cams is adopted. Normally the compression of the motor is 90 pounds. By shifting the exhaust cam-shaft endwise slightly, a new set of cams is brought into play, causing the valves to close late and reducing the compression to 60 pounds for slower running or easier starting. All-steel half-time gears are used, and they are enclosed in an aluminum case and run in grease, which eliminates noise from this source and ensures efficient lubrication.

Thirty-point carbon steel is used for the crankshaft, which is 1 15-16 inches in di-



CHASSIS OF THE NEW 30-35 HORSEPOWER ARDSLEY, SHOWING DISPOSITION OF PARTS AND OPERATING MECHANISM.

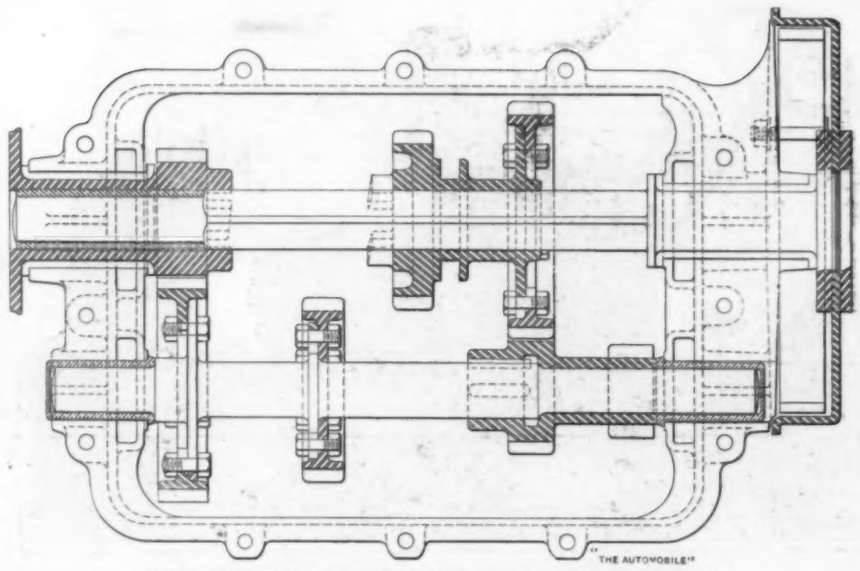
ameter, with crank-pins of the same diameter. The main bearings are 4 1-8 inches long; the centre bearing 4 inches long; and the pin bearings 3 inches in length. Cramp bronze bushings are fitted into the bearings. The steel connecting rods are machined all over and are balanced in pairs. The gudgeon is hollow and is held from turning by a bolt, nut and split pin, the bolt passing clear through the gudgeon. Pistons, rings and cylinders are accurately ground to a finish.

Ignition is by jump spark, dry batteries and a quadruple dashboard coil being used. The spark plugs are screwed into the sides of the inlet valve chambers. Cooling is effected by a Briscoe combined radiator and tank, the water being circulated by a wing pump driven from the half-time gear on the exhaust side. The exhaust pipe arrangement shown in the photograph is a temporary one, applied hastily to get the car running. The proper pipes will give a very free path for the gases, with no sharp turns. From the exhaust pipe a small tube leads off, passing between the pairs of cylinders and communicating with a jacket surrounding the gas inlet from the carbureter, ensuring an even temperature of the mixture. A cock in the pipe regulates the amount of gas passing and consequently the temperature of the jacket.

The clutch is 16 inches in diameter. It is self-contained and exerts no end thrust on moving parts when in engagement. Thrust on moving parts is exerted only when the car is coasting with the clutch held out of engagement, and then the friction is reduced to a minimum by a double ball bearing in the collar. The arrangement of the clutch parts and also of the universal joints just behind it, the latter enclosed in a leather boot, are clearly shown in the sectional engraving, which shows how the joint is provided with a wide bearing surface, not depending on the area of the pins alone.

Change-speed Mechanism.

The drawing of the transmission gear shows the arrangement of the gears; also

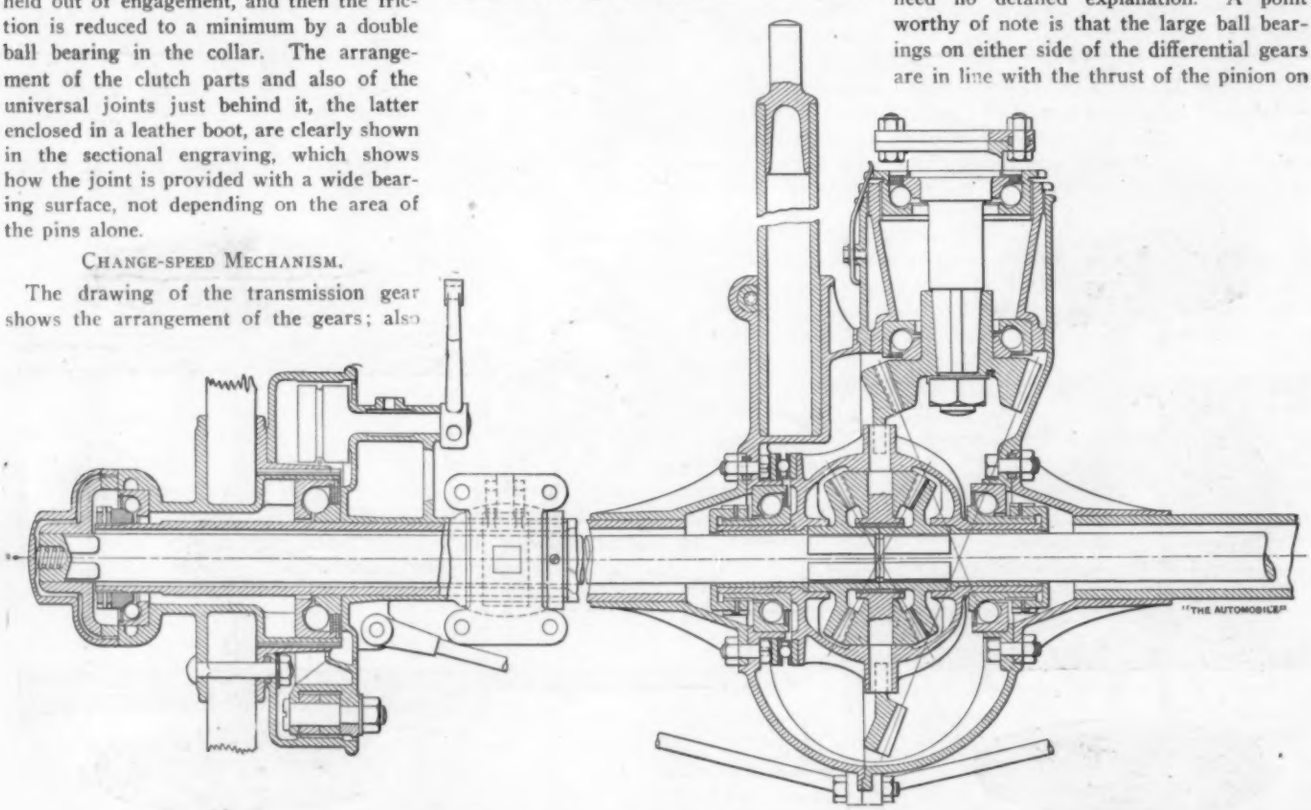


ARDSLEY SLIDING GEAR CHANGE SPEED, PARTLY IN SECTION.

the oil cellars and the steel bearing bushes. Flanges are formed integral with the shafts and to these the gears are bolted. For backing off or easing the ends of the teeth a special milling process is employed, which insures uniformity. As a result of this the gears engage easily and quietly. The reverse is obtained through a countershaft and pair of gears, not shown in the drawing, and this, as well as the three forward speeds, is manipulated by one lever. Drive is direct on the high speed, the shifting gears being slid from the low speed, shown "in" on the drawing, through the second speed and on until the teeth of the positive clutch engage. Not only can the cover be taken off the gear case, but practically the whole gear system may be exposed by also removing the lower half of the case, just as the lower half of the motor crank-case is taken off. The foot-operated brake is shown at the rear of the gear-case.

Details of the Differential.

The bevel gear drive, differential, and live axle are shown in the line drawing, and need no detailed explanation. A point worthy of note is that the large ball bearings on either side of the differential gears are in line with the thrust of the pinion on



REAR AXLE CONSTRUCTION, SHOWING DRIVING GEAR AND DIFFERENTIAL.—LIVE AXLE REMOVABLE THROUGH WHEEL HUB.

ORIENT MODEL F, 14-16-HORSEPOWER LIGHT TOURING CAR, WITH REAR SEAT.

the end of the driving shaft, so that this thrust is effectually taken care of. A rod running from the differential casing forward to one of the cross-members of the frame relieves the propeller shaft of the pressure caused by the tendency of the casing to rotate around the axle. When the car is normally loaded all shafts are practically in line, the universal joints having only to take care of angles caused by the rise and fall of the frame on its springs.

Lubrication is effected by pressure of the exhaust, sight feeds being placed on the dash. Batteries and gasoline tank are located under the front seat, the space under the rear seat being available for storage and accessible from front and rear, two doors being fitted.

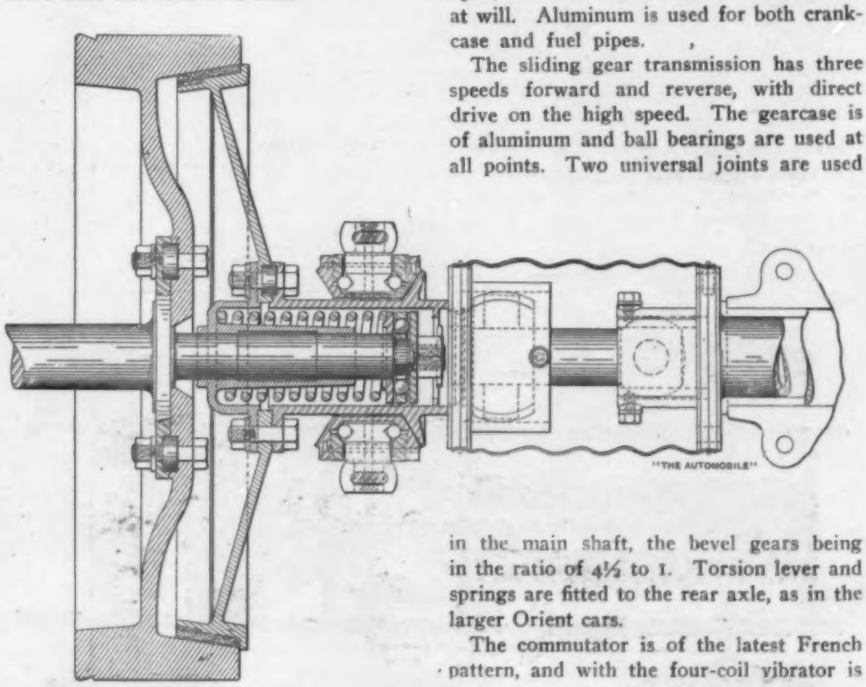
Laminated Wood Body.

The body is of laminated wood and has side entrances. It is asserted to be lighter than if made of aluminum. There is an unusual amount of foot-room in the rear portion, and the seats are roomy and comfortable. These features, in connection with the long, flexible springs and the extremely quiet and steady running of the motor, make the car a most comfortable one to ride in. The wheelbase is 100 inches and the tread standard. The weight of the car, with touring body, is 2,250 pounds. The ratio of speeds is, for the low, one-third of the high, and for second two-thirds of the high. Gearing can be fitted to suit the purchaser.

An important point in the operation of the car is the smooth working of the clutch. Owing to the leverage of the clutch pedal —8 to 1—the directness of the connections and the fact that three-quarters of the width of the leather face of the clutch is backed by deep springs, the car can be caused to move at an almost imperceptible speed, and moving through dense traffic with the high speed engaged was demonstrated to be greatly facilitated by the fine working of the clutch, which might almost be called an auxiliary change-speed gear.

A joint stock organization, called the Ardsley Motor Car Company, capitalized at $75,000, is being incorporated under the laws of New York for the building of the Ardsley cars. Those most deeply interested are Messrs. Fuller & Walsh, who have erected a new garage in Yonkers, N. Y., and W. S. Howard, who is to be general manager of the company. An entire floor of the Fuller & Walsh building is available for the work, and the building is so constructed that two stories can be added when required. Two cars will be ready for exhibition at the forthcoming New York automobile show at Madison Square Garden.

An ordinance recently put into effect at Bristol, Tenn-Va., provides that an automobile shall not be left standing on the streets more than one hour at a time.



ARDSLEY FLYWHEEL CLUTCH IN SECTION SHOWING BALL BEARING COLLAR FOR SHIFTING FORK.

Air-Cooled Orient Model F.

The new light 14-16-horsepower touring car of the Waltham Mfg. Co. is of the side-entrance type, with two individual front seats, the left-hand one swinging forward to leave space to enter the tonneau by the side. With a wheelbase of 82 inches, an easy and convenient entrance is thus provided. The rear seat is 44 inches wide, and all seats are fitted with springs and upholstered in dark green leather. With its excellent proportions, Mercedes type of motor bonnet, and handsome finish, the car presents a most attractive appearance, and the impression thus produced is heightened by an examination of the mechanical details.

The motor has four cylinders, 3¼ by 4¼ inches, air-cooled by means of especially designed flanges, giving a maximum of cooling area. A four-bladed fan running on ball bearings is placed just inside the hood, throwing a current of air onto the motor. The crankshaft is 1⅜ inch in diameter, running in five bearings. The valves are mechanically operated. The flywheel is 16 inches in diameter, weighs 60 pounds, and receives a cone clutch.

The frame is of pressed steel of the most recent design, 4 inches in depth at the center. The wheels are of the artillery pattern, 30 inches in diameter, with 1⅛ inch spokes and 3-inch G & J tires; the standard 56-inch gauge is adhered to. The front springs are 34 inches long and the rear, 42 inches. The rear axle is 1⅛ inches in diameter, of specially toughened steel. The front of the hood is of aluminum, the square openings giving the effect of the regular radiator. Both sides of the hood open, and the hood can be removed entirely at will. Aluminum is used for both crankcase and fuel pipes.

The sliding gear transmission has three speeds forward and reverse, with direct drive on the high speed. The gearcase is of aluminum and ball bearings are used at all points. Two universal joints are used in the main shaft, the bevel gears being in the ratio of 4½ to 1. Torsion lever and springs are fitted to the rear axle, as in the larger Orient cars.

The commutator is of the latest French pattern, and with the four-coil vibrator is

placed on the dash, the battery box being on the running-board. The steering post is of steel sheathed with brass, and the wheel carries the throttle and spark levers. The foot and hand levers are located with special regard to convenience of manipulation. The weight is about 1,450 pounds.

This car is the smallest of a series of four Orients—the 14-16 touring runabout, the 14-16 touring tonneau, the 18-20 touring car and another of the same size but more expensive finish—all having the four-cylinder, vertical, tandem motor.

The 1905 Northern.

The Northern touring car for 1905 is a larger, heavier machine than any heretofore turned out by the Northern Manufacturing Company, of Detroit. It is a full touring car, weighing 2,000 pounds, having side-entrance body and opposed-cylinder motor rated at 17 horsepower, driving through propeller shaft and bevel gears to the live rear axle.

The cylinders are bolted to an iron crankcase which is extended to form the housing of the planetary transmission, the cylinders horizontally lying across the frame at the front and the gear housing pointing toward the rear of the car. The motor is located under a well-modeled hood, with the flywheel between the motor and the radiator. The flywheel is cast with vanes or blades to act as a fan, the blades being set at such an angle that no matter how fast the car is moving the current of air passing through the radiator is accelerated. This not only largely assists the cooling, but also interposes a heavy column of air between the body of the car and the dust of the road. The makers state that although this was not anticipated in the design, it forms a most effective dust-shield, keeping the occupants of the tonneau entirely free from this bugbear of automobiling.

Bore and stroke are each 5 1-4 inches. Splash lubrication is employed. Owing to the angle of the crankshaft, only the lower crank (that is, the one toward the rear of the car) dips into the oil in the case. Thus an excessive amount of oil in the cylinders is avoided, the single splash supplying as much as is needed. The oil finds its way down into the transmission gear housing and thoroughly lubricates the gears and their bearings. There are no oil pipes or leads on the machine. An oil-tank is formed in the top of the crankcase cover, as shown in the illustration of the chassis. Oil is fed from this by pressure from the crankcase. A small ball check valve, through which the air pressure is led to the tank, has a slightly scored seat, so that the pressure is held for only a brief period. Thus, when the motor stops the pressure almost at once leaks away and the oil stops feeding. The oil as fed passes through the sight-glass on top of the tank, and falls into the crankcase, whence it is carried to all parts of the motor and transmission. Compression cups for heavy grease are placed at other points requiring infrequent lubrication. A drain hole, closed by a screw, is provided in the transmission gear-case, so that the excess of oil which collects there may be run out occasionally.

NORTHERN SIDE-ENTRANCE 17-HORSEPOWER TOURING CAR FOR 1905.

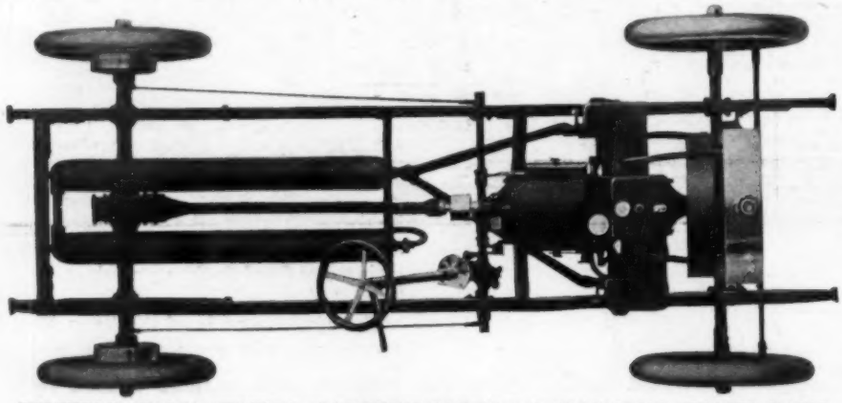
Heavy angle steel is used for the frame, the stock being 1-4 inch thick, 3 inches deep and 2 inches wide. The deepest leg of the angle is set vertically, the 2-inch member being on top and the opening of the angle outward. Angle steel is also used for the cross members. The corners are reinforced by heavy angle plates 1-4 inch thick with 6-inch legs, pneumatically riveted in place.

The valves are of cast iron shrunk on steel stems, the ends of which are then riveted over. Connecting rods are of H-section malleable iron, 10 inches center to center, with adjustable split bearings in each end. The gudgeon bearing is split on one side and fitted with a pinching screw, while the wrist-pin end has a hinged cap which tightens up against a fiber liner, thus giving a slight elasticity at this point which tends to keep the screw tight. Gudgeons or piston pins are hollow, hardened and ground, and have each four oil grooves. Bronze is employed for the bushing. Set screws are tapped through the piston pin bosses from below, pass through clearance holes in the lower wall of the hollow pin and bear against the top inner wall, thus keeping the pin pressed hard against the top of its seat, regardless of fit.

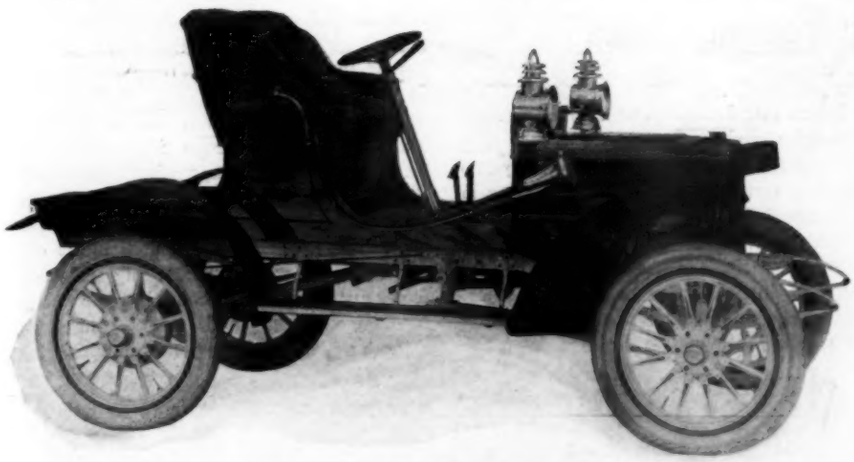
Planetary transmission gearing is employed, giving two speeds forward and reverse. This being enclosed, as already described, in a casing integral with the crank case, it is not only protected from dust but is held rigidly in alignment with the motor shaft, the power-producing and speed-changing gear all being concentrated in a single support. A shaft carrying the final gear of the transmission passes through a babbitted bearing in the rear end of the transmission case, its rear end being keyed and pinned to one of the members of a sliding universal joint, the other member of which is secured to the forward end of the bevel gear shaft. A cylindrical casing encloses the whole joint, sufficient telescoping motion being permitted to allow for the rise and fall of the rear axle. The shaft from the transmission case is very short, the joint being close to the case, while the propeller shaft carrying the bevel driving pinion is long, so that the movement of the universal joint is slight.

There are no strut rods between the rear axle and the frame of the car, the full elliptic rear springs serving to transmit the propulsive effort to the chassis and body. The rear springs are bolted up to oak blocks on the under side of the frame, and are secured to rotary perches on the axle, which are lubricated by horizontal grease cups.

Roller bearings having hardened rollers and tracks are used throughout the rear



NORTHERN CHASSIS, SHOWING TRANSVERSE POSITION OF HORIZONTAL OPPOSED MOTOR.



NORTHERN TWO-PASSENGER CAR WITH PLATFORM AT REAR FOR BAGGAGE

axle and differential gear, taking the thrust of the driving pinion. Two malleable iron castings having internal stiffening ribs form the halves of the rear axle sleeve and differential casing, and are bolted together in the centre, the joint being oil tight. The inner ends of the two halves of the inner driving axle are squared and fitted into square holes in the hubs of the differential gears. The outer ends of the two halves of the live shaft are keyed into the hubs of the road wheels with long steel keys, the shafts being held from longitudinal movement by a shoulder inside and a nut and lock-nut on the outside, under the dust-cap. By taking off the wheels, dust-caps and axle nuts, the live axles can be removed without further dissembling. Heavy steel tubing, two inches in diameter, forms the front axle. Spring perches of malleable iron are brazed on. Lemoine type steering heads are used. Roller bearings are used on the front wheels as well as on the rear ones. The full elliptic rear springs are 36 inches long. Front springs are semi-elliptic, and all springs are 1 3-4 inches wide and have 6 leaves each.

Expanding ring emergency brakes are fitted on the rear hubs, the drums being of malleable iron and the expanding rings of grey cast iron faced with babbitt. These rings are pivoted on one side and split on the other, the operating cams being placed between the split ends and worked by a a shaft. A pedal operates the hub brakes, and each brake is independently adustable. Another braking medium is provided in the reverse gear, which is applied by means of a pedal. This gives a powerful braking action and should be carefully used; the manufacturers state, however, that this practice is not injurious to the gearing if good judgment be exercised.

Speed changes are operated by a short handle on the steering column, which transmits motion to a rocker arm under the footboard through a tubular sleeve. Ignition is also controlled by a lever on the steering column. Three pedals operate respectively the reverse, the hub brakes, and the throttle; the latter sliding back and forth and being held by a ratchet arrangement when the foot is removed. This pedal takes the whole foot, and the retaining ratchet is thrown in and out by a slight tilting motion.

The tubular radiator has a removable water tank on top. A sliding vane pump, driven by a vertical shaft, circulates the water, fire-lined rubber hose being used for the flexible water connections. The shaft that drives the pump also actuates the distributor and the valves of the motor, the distributor being at the top, the valve cams at the center and the pump at the bottom.

There are two mufflers, each being 5 inches in diameter and 54 inches long, the exhaust entering the forward end of one, passing out of the other end and into the second, from which it escapes. This arrangement is very effective, and yet is said to cause little back pressure. The illustration of the chassis shows the muffler arrangement plainly. The motor is said to be noiseless in operation.

Rubber covered and brass bound running boards extend along each side of the car, giving easy access to the front seats and the side entrances. The starting crank is carried in spring clips at the forward end of the running board on the operator's side.

Several styles of body can be fitted to the same chassis. As there are no connections between the chassis and the body proper, except the holding-down bolts, it is an easy matter to change. The bodies supplied consist of a two-seated body with flat deck behind, a side-entrance touring body, and a limousine. The first-mentioned two are shown in the accompanying illustrations.

Presence of Mind.

The Judge—You plead guilty, then, of running your automobile at fifty miles an hour and incidentally running down and severely injuring an old man?

The Prisoner (meekly)—I do, your Honor.

The Judge—I sentence you to thirty days in jail!

The Prisoner—But, your Honor, I own the car—I'm not a chauffeur!

The Judge—Humph! Why didn't you say so before? Pay five dollars and git out!—*Season*, New York.

The engraving herewith shows one of the latest types of Knox commercial cars, built for a Boston wholesale grocery house. The West Indies Transportation Company has also placed a large order for vehicles of this type to carry freight and passengers over a circular route embracing thirteen towns outside of Havana, Cuba. The interior of the body, back of the driver's seat, is 102 inches long and 49 inches wide, and has a capacity of 2,500 pounds. The double opposed cylinder air-cooled motor, with 5-inch bore and 7-inch stroke, will drive the car at a maximum speed of eighteen miles an hour. Wheels are 32 inches in diameter, with 3 1-2 inch solid tires. Wheelbase, 86 inches; tread, 56 inches.

Model C National Touring Car.

AN attractive-appearing car, embodying numerous changes and improvements over the machine put out by the same makers a year ago, is the Model C National gasoline touring car, shown in the illustration herewith. It has a four-cylinder vertical motor rated at 24-30-horsepower, a three-speed transmission with direct drive on the high speed, and a propeller shaft drive embodying some individual and interesting features.

The frame is of pressed steel, 5-32 inches in thickness, with three transverse members, the middle and rear straight, and the front member dropped to carry the circular radiator in front. A channel section false frame connects the front and middle cross members. It carries the engine and gearcase, the former of which is supported by feet projecting from the upper half of the crankcase, and the latter by wings rising from the lower half of the gearcase, so that the bottom half of the crankcase and the upper half of the gearcase can be removed without disturbing the motor and gears.

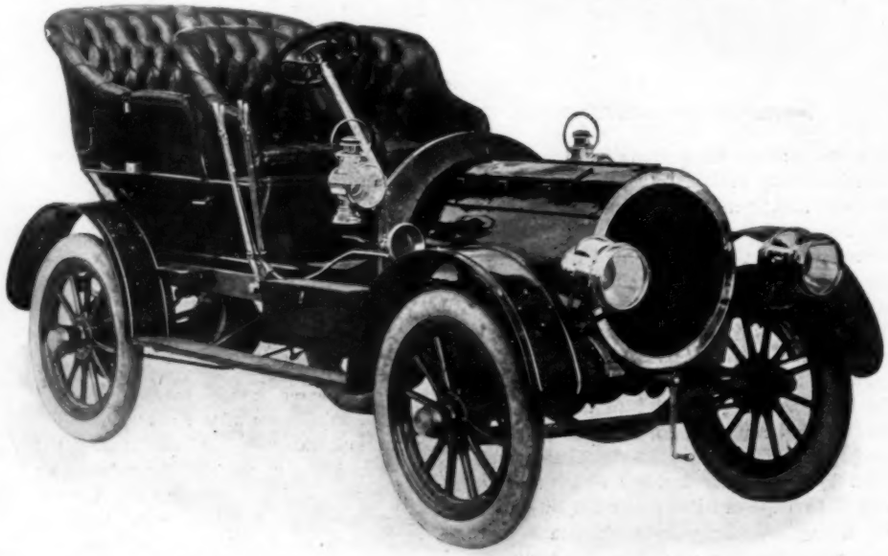
The crankshaft has five bearings, all of generous length, and all supported from the upper half of the crankcase. The oil pan has three partitions, so that the oil will not run to one or the other end on grades. A vent in the hand-hole cover prevents accumulation of presure in the case. The shaft and crankpin bearings are of babbitted bronze, and pockets are arranged in the case to carry the slashed oil to the bearings.

The cylinders are cast separately, and the valves are located together on one side, and all operate from one camshaft. The cylinders are 4¼ inches bore by 5 inches stroke, and the valves are 1¾ inches in diameter. The normal speed of the engine is 900 revolutions per minute. The cooling water both enters and leaves the tops of the jackets, partitions being presumably used to insure circulation. The engine is stated to weigh complete 380 pounds.

Circulation is maintained by a gear pump driven direct from the end of the cam shaft through a detachable coupling. A vertical shaft at the rear end of the engine carries the spark timer at its upper end, and likewise a centrifugal governor, which automatically advances and retards the spark, according to the speed of the engine. The spark plugs are threaded into caps immediately over the exhaust valves, and are connected to rubber-covered high-tension wires encased separately in fiber tubes for greater safety.

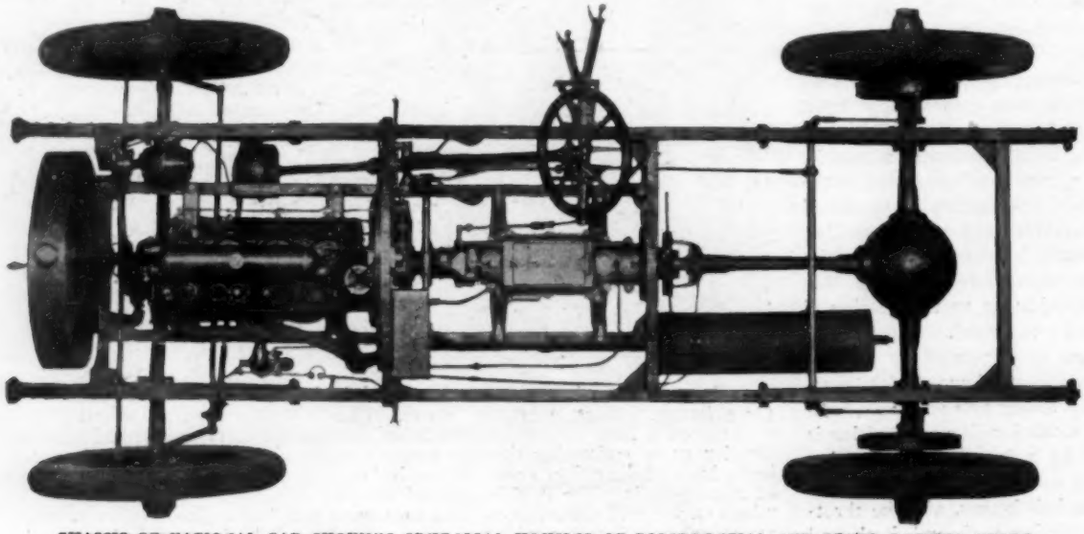
The radiator is circular in form, with flattened water tubes of peculiar construction. Back of it is a 19-inch fan running on ball bearings and driven by a belt at three times the speed of the motor. The radiator and piping holds five gallons, and the circulation is from the motor to the top of the radiator, and from the bottom of the radiator to the pump.

The clutch has six flat springs recessed into the aluminum cone face under the leather to ensure a progressive engagement of the clutch. The spring is helical and is carried upon an extension of the engine shaft, on which the clutch hub itself also runs; the arrangement being such that the thrust is self-contained when the clutch is engaged. The speed gears cannot be shifted without releasing the clutch.

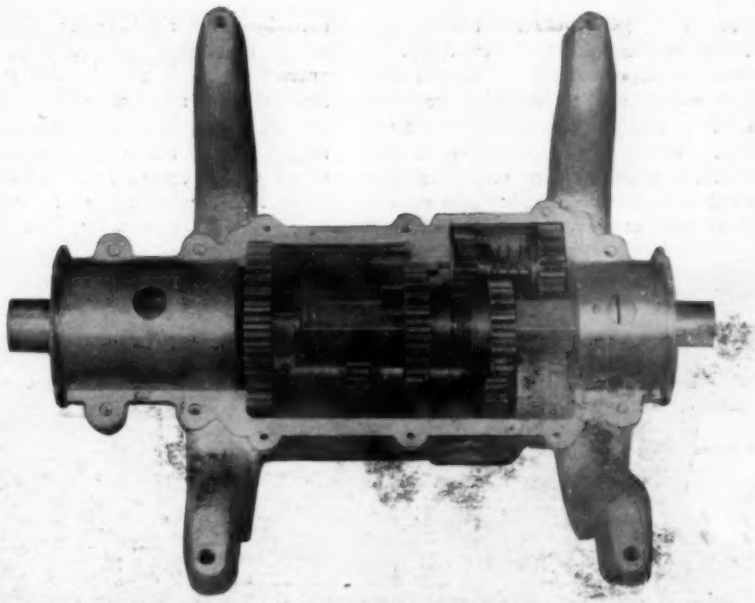


MODEL C. NATIONAL TOURING CAR WITH 24-30-HORSEPOWER VERTICAL ENGINE.

A flexible coupling resembling a universal joint connects the clutch with the first gear shaft. The gear case itself gives three speeds, and the gears have the general arrangement shown in the illustration, with the secondary shaft below the driving shaft. The shafts turn in large adjustable ball bearings, with two rows of balls to each bearing, the adjustment being accomplished from the outside without disturbing the



CHASSIS OF NATIONAL CAR SHOWING SPHERICAL HOUSING OF DIFFERENTIAL AND BEVEL DRIVING GEARS.

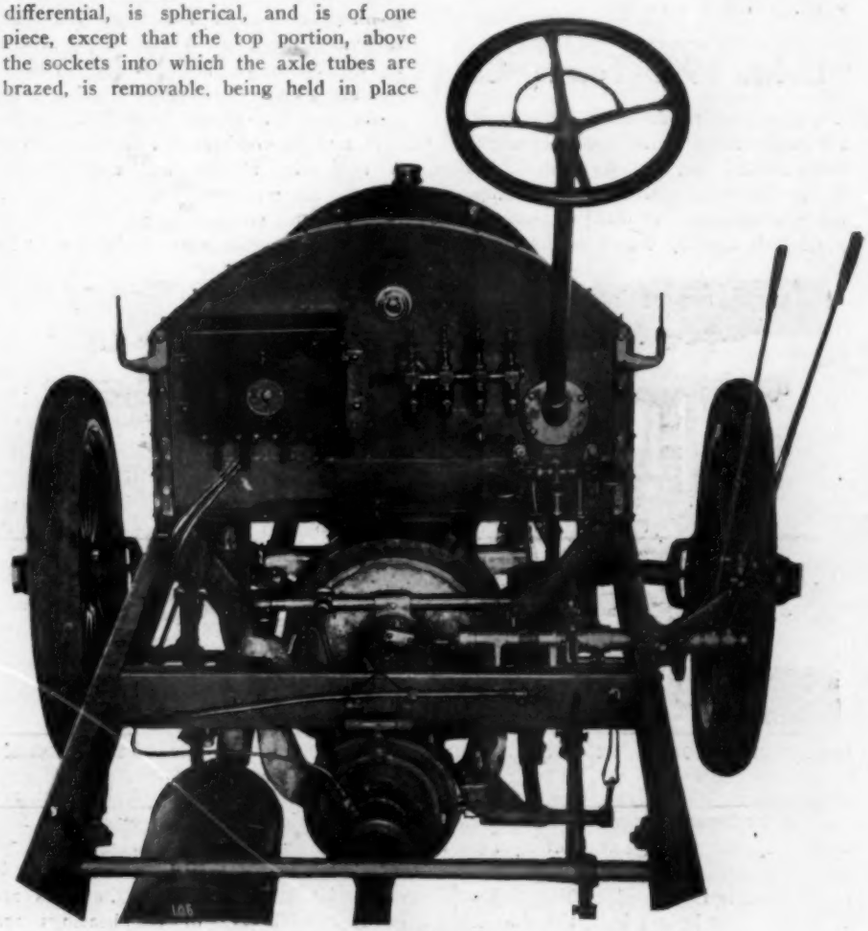


NATIONAL CHANGE-SPEED GEAR, SHOWING COIL SPRING FOR REVERSING GEAR.

case or its contents. In the recess at the further side of the case is seen a short, square countershaft carrying two pinions. Through this the reverse motion is accomplished when the gear carriage, carrying the two sliding gears, is moved to its extreme forward position, in which the smaller of the two pinions on the reverse shaft is shifted forward against the coil spring seen until it engages the large gear on the lower shaft. The reverse pinions are thus left idle when not in use, instead of being compelled to turn at high speed as they would otherwise have to do. The gears on the lower shaft are keyed to enlarged hubs on the shaft, and all gears are of hardened steel, 7-8-inch face and 6 pitch. The makers recommend keeping the case about one-half filled with a mixture of oil and graphite. The several joints of the case are oil-tight, and the shifter rod works through a stuffing box to exclude dirt. The gear-case, like the crank-case, is aluminum, and is stated to weigh 70 pounds complete.

At the rear end of the transmission shaft, back of the gear-case, is carried the service brake drum, enclosing half of the universal joint connecting with the propeller shaft. The latter departs somewhat from usual American practice in having only one such joint. It runs inside a heavy tube which is brazed into a lug projecting from the central case of the axle. The front end of this tube is attached to a sort of link depending from the middle cross member of the frame, as seen in the illustration of the dash and clutch with the body removed, and its function obviously is to steady the axle. The rear end of the propeller shaft extends into the driving case, where it is squared to carry the driving bevel pinion. Ball bearings carry this shaft, and ball bearings are used in the rear axle as well. The ratio between the bevel pinion and gear is 3 to 1, and the gears are 4 pitch.

The rear axle is an unusually satisfying example of intelligent design. Its central case, surrounding the driving gears and differential, is spherical, and is of one piece, except that the top portion, above the sockets into which the axle tubes are brazed, is removable, being held in place by heavy screw threads. The fixed axle tubes extend clear through the wheel hubs, which revolve on adjustable ball bearings on the outer ends of these tubes. The tubes are brazed into the driving case, and the spring seats and castings supporting the brakes are likewise brazed on them. Inside these tubes are separate shafts, the inner end of each of which is squared to enter one of the differential gears, and the outer end of which is also squared to enter a dog clutch by which the driving power is communicated from the shaft to the hub of the wheel. Thus these shafts are independent of any possible springing of the axle, since they are not supported in bearings at all. In the axle-case itself the differential shell has projecting hubs, which run in ball bearings attached to the spherical axle-case. One of these bearings is held by a split cap, which may be removed by undoing two studs, thus permitting the withdrawal of the entire differential and attached bevel gear intact through the circular opening in the top of the case. Thus the wheels turn on the axle tubes and the differential runs in its own bearings in the spherical case; and both are independent, as regards alignment of bearings, of any weight or stress that the axle may suffer. For



DASH AND OPERATING MECHANISM OF NATIONAL CAR.

economy of weight the axle is trussed by a 5-8-inch rod under the case. The differential is of the spur-gear type and substantially made.

The wheels, front as well as rear, run on ball bearings, and are shod with 34-inch by 4-inch tires. The emergency brakes are 13 1-2 inches in diameter, with internal expandable acting-brake shoes. The front axle is tubular, with Elliott yokes, and 7-8-inch pivots in the knuckles. The steering gear operates by a transverse drag link, the reducing gear itself being located well forward, and the steering column given a long rake. The springs are shackled at the rear ends only, and are all 36 inches long.

The regular pedal control system is used, the inner of the two side levers acting on the emergency brakes. The spark advance is located on top of the hand steering wheel, and a second lever on the hand wheel acts on the throttle valve in the carbureter. Between the clutch and brake pedals is a small pedal which acts likewise on the throttle, so that the car can be controlled as to speed by either hand or foot.

The builder of this car is the National Motor Vehicle Company of Indianapolis, which until last year confined its work to building electric vehicles.

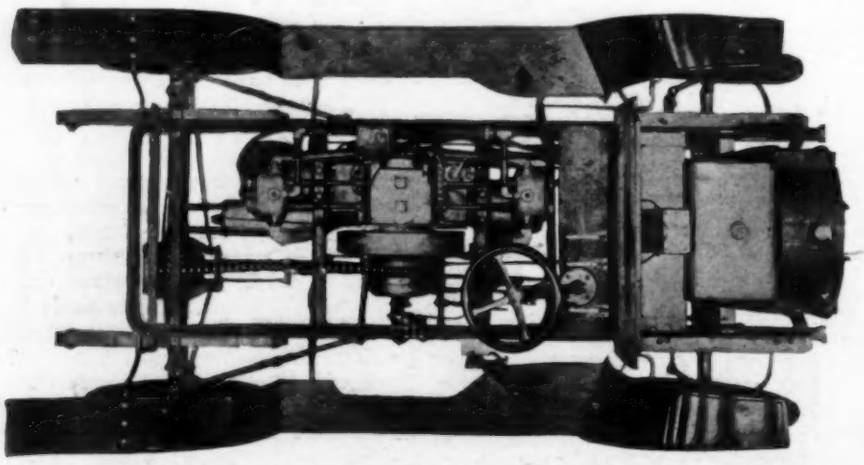
Dolson 1905 Touring Car.

Comparatively new among the aspirants for public favor is the double-opposed-cylinder touring car, built by John L. Dolson & Sons, and illustrated in the accompanying photographs. It has a motor with 5 1-2-inch bore by 6-inch stroke, rated at 20-horsepower at 600 revolutions per minute; a two-speed planetary transmission, and a special arrangement of springs a little different from the ordinary.

The chassis is formed of T-section steel 2 1-4 by 2 1-4 by 1-4 inch, the side members being bent at the corners and the ends brought together in the middle at front and rear. These side members are trussed with 5-8-inch steel rods, giving a frame stiff enough to be entirely independent of support from the body sills.

The motor and transmission gear are hung from two channel-section cross members to which the cylinders are bolted. The valve chambers are offset, bringing the valves in line so that but one exhaust and one inlet cam are required. The valve openings are 1 3-4 inches diameter, and the valve heads are of cast iron secured to the stems by taper threads, and by riveting. The valve chambers and cylinder heads are cast integrally with the cylinders, and the crank-case is divided vertically, half being integral with each cylinder, making the minimum number of parts to be fitted and eliminating all joints except one. An inspection cover is fitted over the cam shaft. The crank-shaft bearings are each 1 7-8 inches diameter by 4 1-2 inches long, and the crank-pin bearings are 1 7-8 inches by 2 1-2 inches. The cam shaft is driven by spiral gears, and the cams are of tool steel. All of the bearings are of the best phosphor bronze, and the machining is done in such a manner as to insure the crank bearings and cylinder bore being at right angles. The pistons are 6 1-2 inches long, and are turned, ground and polished with the amount of taper at their ring ends necessary to keep the piston from binding by expansion. The rings are 7-16 inches wide, and each has an oil groove turned in it. Ignition is by jump spark, with one spark coil and a distributor in the secondary circuit.

DOLSON 1905 20-HORSEPOWER SIDE ENTRANCE TOURING CAR, IN THE ROUGH.



CHASSIS OF DOLSON CAR, SHOWING OPPOSED CYLINDER MOTOR AND PLANETARY TRANSMISSION.

The planetary gears are of steel, 1 1-4 inches face, 8 pitch, and 20 degrees involute, which makes a stronger and quieter running gear than the ordinary 15-degree tooth. The transmission casing is bolted solidly to the fly-wheel spokes, thus insuring its alignment.

The springs are full elliptic: the rear springs have full scroll heads, and the front springs have button heads in front and scroll heads in the rear. The shackles of the rear springs are long enough to permit taking out a link of the chain when necessary, and of course the axle is guided by distance rods, as the photograph shows. The front axle also is provided with distance rods, these being practically horizontal and in line with the rear joints of the front spring, thus, it is claimed, relieving the front springs of any fore and aft shocks.

The control is by side lever and pedals, the former operating the high speed and the service brake. The right hand pedal engages the slow speed, and the two left hand pedals operate the emergency brake and reverse, and are placed so close together that both may be operated at once by the left foot, thus giving a very powerful braking action. Steering is by wheel and irreversible worm gear, and the spring and throttle levers are located on the steering gear.

Now a Texan comes forward with an invention for turning a buggy into an automobile. The Marshalltown *Times-Republican* declares that the crying need is for something that will prevent automobiles from turning into buggies.

Correspondence

Swiss Automobile Omnibuses.

Editor THE AUTOMOBILE:

[136].—It may be of interest to the readers of THE AUTOMOBILE to hear that in Switzerland automobiles begin to find application for public use. Several companies have already been organized to provide for regular service between the smaller places, where neither street cars nor railways exist. This applies especially to lower parts of the country, as, for instance, between Zürich-Forch, Münchwilen-Turbenthal, Flawil-Degersheim, etc., where the roads are in good condition and are more or less level.

The accompanying picture shows one of the latest styles of the cars used for this purpose. The exterior of the omnibus presents a very elegant and striking appearance; the body is painted in cream color, while the wheels are yellow. The inside is arranged for ten roomy seats and can be heated during the cold season by the exhaust of the motor. The platform behind which is separated by a sliding door, accommodates four passengers. The seat for the chauffeur is located directly above the motor and is entirely enclosed by lights which can be dropped down at his convenience; a door above the left wheel in front leads to this seat. The top of the wagon is surrounded by a high rail which can hold all the necessary baggage.

The four-cylinder motor is of about 20-horsepower and is capable of producing a speed of fifteen to twenty miles an hour. To avoid tire troubles the wheels, which have to endure great strain, are supplied with solid rubber tires, and a box with sand is placed on each side to protect the car from slipping on wet or snow-covered roads. The attendance of the car requires two men —the chauffeur, and the guard to look after the passengers.

These automobile omnibuses have become much in use of late and seem to enjoy a great popularity. They are most comfortable and very well suited for country as well as for city use. They have already succeeded in supplanting the old-fashioned post-chaises which have been for centuries a typical feature of Switzerland.

EMIL C. GEISSBERGER.

Iowa Road Law Tested.

Editor THE AUTOMOBILE:—

[137].—A test case of the new Iowa road law has been tried here in the November term of the District Court and resulted in a decision in favor of the defendant, William Coverdale, an automobilist.

Coverdale was charged with having violated Section 9 of Chapter 53 of the Thirtieth General Assembly, reading:

"Any person operating a motor vehicle shall use reasonable caution in passing such horse or animal, and the operator and occupant of any motor vehicle shall render necessary assistance to the party having in charge said horse or other draft animal in so passing." The penalty for violation is a fine not exceeding $25.

The information against Coverdale was sworn out by the occupants of a vehicle which the defendant met near the top of a hill three miles from Maquoketa on July 21 last, while he was driving his automobile. When about 100 feet distant the occupants of the horse-drawn vehicle signalled Coverdale to stop, which he did within forty feet. The road was narrow, with embankments on either side. When passing the automobile the dashboard of the wagon gave way and precipitated the driver feet foremost between the tongue and right wheel of the vehicle. The horses ran away, dragging him some distance before he let go of the reins; the other occupant of the wagon jumped and claims injury.

The case was tried without a jury before a justice of the peace, who found the defendant guilty, and stated that inasmuch as the evidence tended to show that Mr. Coverdale had not given half of the road and had not left his vehicle, he had not rendered such necessary assistance as required by law.

The case was appealed to the District Court, and after the testimony of the State had been introduced the defendant's attorney made a motion to take the case from the jury and instruct the jury to return a verdict of not guilty on the ground that the State had not made out a case. The court sustained this motion, and in doing so stated that the driver of the automobile stopped as soon as the signal was given. In so doing he was compelled to stop in the middle of the road. The approaching team was so close that it would have been dangerous to have pulled the machine to one side, and if he had done this he would have violated the law which says that he must stop when signalled to do so. As to the definition of "necessary assistance," the court said that in his opinion it meant such reasonable assistance as could have been given under the circumstances.

MAX L. WRIGHT, M.D.

Maquoketa, Ia.

Easy Route to Sapphire Country.

Editor THE AUTOMOBILE:—

[138].—Answering the inquiry of "Piscator," regarding the feasibility of an automobile trip through the Sapphire country, will say that this trip is not only possible, but will be found pleasant and interesting. All that is needed is a good hill-climbing machine and there should be no trouble. As Mr. Fitzsimmons, of Charlotte, N. C., says, the easiest way is to ship the machine over the mountains. But in case "Piscator" wants to come in with a machine, the most interesting and easiest way will be to come from Greenville, S. C., through by "Cæsar's Head," and from there to Brevard, N. C., and the Sapphire country. The trip up the French Broad River is not practical, as the roads are fearful between Hot Springs and Alexanders, N. C., a distance of about thirty miles.

The distance from Asheville to Sapphire is from fifty to sixty miles, depending on the route taken, and the roads are good country roads, with the grades nothing extraordinary. The trip is easily made inside the day, with all the time wanted for dinner and taking in the views.

If "Piscator" has machine shipped in, and ships it to Asheville, we will be pleased to give him the benefit of our knowledge of the routes and roads to the Sapphire country.

E. C. SAWYER.

Asheville, N. C.

An automobile passed through town last Saturday. It was the first one to pass this way.—*Petoskey (Mich.) Independent.*

LATEST STYLE MOTOR 'BUS IN USE BETWEEN TOWNS IN LOWER SWITZERLAND.

THE AUTOMOBILE

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Complication and Simplification. Among the cars worth serious consideration at the Paris Salon nearly all came under one of two broad classes. Those in which the constructor had succeeded in reducing complication and carrying simplicity to the point below which losses in efficiency would occur, formed one class, and not the larger one either. The other class embraced those in which the designer had incorporated all the mechanism that could well be gotten in the space encompassed by the frame and hood, with a liberal overflow under the footboard, the body and on the dash. Such cars have "talking points" galore, and now only need an "automatic" driver to make motoring the lazy man's delight and the repair man's chief source of joy.

It was very noticeable in a tour of critical inspection along the aisles in the Salon that the firms which have had the greatest experience in point of time and the best reputations for sound construction have been the most conservative in placing superfluous devices on their cars. Those, on the contrary, who are newest in the business seem to consider the introduction of rods and levers, bell-cranks and tappets as an essential of high grade construction, for on some of the most conplicated the workmanship was beautiful.

At the Panhard and Renault stands in particular the simplification of design was strikingly apparent, so much so indeed that an examination of either of these cars after an inspection of the newer creations produced an impression of bareness that was temporarily not to the advantage of the simpler car. A careful examination of the cars on their own merits disclosed the real beauty and utility of simplicity.

This is carried out not only in the elimination of non-essentials, but in the disposition of existing parts. Pipes and wires especially are laid in direct lines and placed so that their course is followed at a glance.

In this respect the best cars at the Salon show a great improvement, for if there are no striking novelties in construction there are evidences of much labor and thought spent in the direction of real engineering design. The automobile is rapidly becoming a machine, in the same class of engineering construction with machine tools, stationary engines and the like. As the Salon reveals the situation the body builder is now merely an adjunct, for all else embraced in the construction calls for engineering skill of a high order.

Mercedes influences were not so potent as at previous shows; in fact, the Mercedes strangely enough showed a reversion to first principles in the adoption of the direct drive valves at the sides operated by cams and push rods instead of the more complex system of valves in the cylinder heads worked by tappets. Evidently the Mercedes designers have also learned that a direct movement is mechanically preferable to one which goes around corners. Those builders who have been slavishly following the Mercedes lead now unhappily find that they are without a leader.

No one thing is more plainly taught by the exhibition than the truth that automobile design and construction is a serious branch of engineering, which necessitates special knowledge and skill which cannot be acquired in a day or a year. It is not difficult to build a car that will run, but it is quite another matter to build a car that will run satisfactorily. Experience in other branches of engineering does not necessarily imply skill in automobile construction. This is written all over the Paris show.

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The Olds Tour of Europe. As a method of testing and incidentally advertising new cars, the individual endurance run now coming into vogue abroad has much to recommend it over the method too frequently employed in this country, of a wild all-night rush at full speed between New York and Boston. Several of these runs have recently been recorded, such as that of England in two Oldsmobiles, and of Captain Deasy in a Martini car and the tour of France by Cormier in a new de Dion, but the most interesting is the tour described in this issue of the little Olds runabout driven by Maurice Fournier. The Martini and de Dion were large and powerful touring cars, well fitted for even the severe work to which they were subjected in exceptional winter weather; but the Olds, as every American knows, is one of the lightest and lowest priced of a class of light and inexpensive runabouts, supposed by many to be suitable only for city use.

That such a car, taken from stock and without special preparation, should cover 3,000 miles of roads in midwinter, taking the average of bad and good together between Paris and Vienna, and running regularly on schedule in spite of snow and unusual cold weather, is a tribute alike to the American automobile industry and to the individual makers.

One need not be unduly sceptical or suspicious in hesitating before an unreserved acceptance of the story of a wager of $20,000 as the first cause of this test; but, whatever the occasion, the outcome has been most satisfactory and its authenticity is not to be doubted.

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Runabouts at the Paris Show. Small cars were not much in evidence at the Paris Automobile Salon. It was essentially a large car show. The big motors upon whose work French reputation for car construction principally rests were almost a unit in the display of the larger machines, fully powered and equipped for the transportation of several passengers over the road at moderate or high speeds. Some makers, such as Renault and De Dion, for example, are associated with the construction of cars of low power, but those are to an extent in a class by themselves, and their cars in construction are more akin to the regular full powered touring car than to the runabout. It is to the latter type that the reference here is particularly made; a car of light weight, low horsepower, and of simple construction, with a front seat only for the driver and one passenger. Such cars were to be seen, but in small numbers, and so overshadowed by the tremendous display of big machines that the apparent number seemed less than the actual.

There are reasons for this condition, and two that have been advanced are worth consideration. The present condition did not always exist, for runabouts were built in France in considerable numbers in earlier days of the idustry. They were turned out largely, however, by former bicycle constructors and were wanting in the important essentials of reliability and durability. The sale of these cars had about the same effect in France as the sale of many of the earlier steamers had in America—the discouragement of owners and the frightening off of many whose means would permit an investment in a small car only. Meanwhile the big firms who were putting out reliable cars were keeping in the procession which was headed toward the most powerful types of touring cars. As they progressed they found ready sale for their output, so that now the production of full-sized touring

cars absorbs all their energies and leaves no opportunity for taking up the construction of an entirely different type, even if they were disposed to do so.

The other reason advanced seems, however, to more fully explain the situation. France is a comparatively small country in dimensions. It has magnificent roads and its well-to-do inhabitants are filled with a passion for touring, which to a surprising extent takes the place of the desire for foreign travel that in America and Britain leads thousands of persons beyond the confines of their country some time in the year. When the Frenchman buys a car he has touring in mind and he wants a machine that will take him and the members of his family to the coast or through the rural districts when time and inclination permit. A runabout will not answer the purpose. Even if the horsepower is small the car must be big—big enough to hold the family.

In America, where distances are enormous and roads invariably bad, the man of this class who wants to go to the seaside or the mountains with his family takes the train. In his own home town or neighborhood a runabout answers all his requirements of an automobile. It replaces the now old-fashioned horse and buggy, without which no American country home is supposed to be complete.

There is another side to the situation, and that is how large a sale of runabouts could be worked up were some enterprising maker properly to push the sale of such cars. The national tendency may be in one direction, yet this would not prevent a builder from selling all that he could put out as a unit. It is certainly a situation warranting the closest investigation by the American manufacturer who has an eye for export trade.

The easiest way to build up this trade would be to take account of French preferences, which are decidedly in favor of the vertical motor-in-front, sliding gear transmission, pressed steel frame and ordinary spring suspension. Still there are well-informed persons in the trade in Paris who hold that possible buyers of runabouts are not sufficiently informed about construction to prefer one model to another, and that they could be induced to buy cars with horizontal motors, if the prices were right.

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The question of finality of design as a commercial factor, touched upon in these columns last week, is the text for a rather exhaustive review by *The Engineer*, of London, which we reprint on another page. It is interesting to note that the general conclusions as to the effects of changes, even of marked improvements, on the cost of production, the theoretical desirability of uniformity and standardization, and the actual approach to a realization of these ends are strongly corroborative of the views expressed by THE AUTOMOBILE.

TO BUY DE DION PLANT.

Americans Have Nearly Closed Negotiations for Great French Factory.

Special Correspondence.

PARIS, Dec. 20.—Negotiations for the purchase of the great De Dion plant just outside of Paris by a syndicate of American capitalists are reported to be nearly closed. The information comes from an authoritative source just before the closing of the American mails, so that details are not now obtainable. The plant is located in Puteaux, one of the suburbs of Paris on the river Seine in the district which contains several of the principal factories. The plant is very extensive and is splendidly equipped with modern American machine tools.

In the past this house has been altogether associated with the production of small cars, but this year it exhibits a new four-cylinder 15-horsepower model at the Show.

From the same source it was also learned that other large makers have been approached with offers of American purchase. Should these negotiations go through, the most eminent firms in France will be largely in the hands of foreign capital, as several sales to English syndicates have been made in the past, as is well known in the trade and out.

CHICAGO'S BIG SHOW.

More than 200 Exhibitors on Main Floor of Coliseum Building.

Special Correspondence.

CHICAGO, Jan. 2.—General Manager Samuel A. Miles, of the fourth annual Chicago Automobile Show, is now in Chicago holding daily conferences with the Chicago managers relative to "the biggest show ever held in the West." And there seems to be foundation for Mr. Miles' claim. All the floor space has been assigned and many applications have been received that could not be accepted. It has been found impossible to allot more than 60 per cent. of the space requested.

"More than $1,000,000 in automobiles and accessories will be on exhibition in Chicago," said Mr. Miles, who has established headquarters in the new Southern hotel, Thirteenth street and Michigan avenue. "To be exact, as nearly as we can estimate, the figure should be $1,100,000. It will surpass the exhibition of last year as far as that of last year exceeded the show of the year before. Among the foreign exhibitors will be Renault and De Dietrich, of Paris, and Benz, of Mannheim, Germany. All the great manufacturers have come to regard Chicago as the great distributing center and the demand for floor space has indicated their belief that the middle west is the place to look for business."

Unless there are changes there will be 208 exhibitors on the floor of the Coliseum during the show.

RACING CARS AT NEW YORK SHOW.

A notable collection of racing automobiles will be exhibited at the Madison Square Garden automobile show in New York City. There will be Barney Oldfield's Peerless *Green Dragon;* Kiser's Winton *Bullet;* Lytle's 24-horsepower Pope-Toledo, of Vanderbilt Cup race fame; Kulick's 20-horsepower Ford skeleton track racer; Heath's Panhard, which won the Vanderbilt Cup race; the 90-horsepower Pope-Toledo car entered for the 1905 Gordon Bennett race; Frank Croker's Simplex; the Packard *Gray Wolf,* another Vanderbilt Cup race veteran; and a number of other cars that have made unusual individual records, including the Transcontinental Franklin.

A number of automobiles exhibited at the recent Paris Salon are being shipped to New York for the forthcoming Importers' Salon, January 11 to 24, and will add much to the interest of that exhibition. It is understood that the entire Paris exhibits of Mercedes, Leon Bollee, Hotchkiss and C. G. V. machines are being imported.

PALM BEACH PROGRAM.

Auto Boat Events Scheduled for February 1, 2 and 3, on Lake Worth.

The program of auto boat races to be held on Lake Worth at Palm Beach, Fla., February 1 and 3, was announced this week. Considerable interest is being taken in these races, and transportation arrangements for boats from the North are being made. It is considered advisable that all boats from New York should leave about January 20. The program is as follows:

FEBRUARY 1—FREE FOR ALL DAY.

No handicaps in these races—High speed motor boats, four miles; pleasure motor boats under twelve miles an hour, four miles; motor boats under twelve miles an hour, for manufacturers only, four miles; cabin motor boats, four miles; chartered motor boats, four miles, and high speed motor boats, eight miles.

FEBRUARY 2—EAST COAST CUP DAY.

Sailing boats and auxiliaries, free for all, four miles, high speed boats, twenty miles. American Power Boat Association rules, for $500 subscription cup; the East Coast Cup, chartered rowboat race, pleasure rowboat race and fishing boats sailing.

In the evening there will be a parade and three prizes for decoration. There will also be evolutions around the boat house and band playing.

FEBRUARY 3—FLOWER DAY.

Endurance race, all motor boats, based on speed, reliability and facility of operation; all motor boats under twelve miles an hour, one mile; high speed boats, one mile; motor boats under twelve miles an hour, four miles, American Power Boat Association handicap rules, and a flower carnival and day parade.

As a result of the recent conference between W. J. Morgan and members of the Florida East Coast Automobile Association at Daytona, all difficulties were amicably settled and some changes were made in the program of races. The ten-mile race for cars of 40-horsepower or less was cut out, as were also the five-mile time trials for stock cars, and kilometer races were added for each of the weight classifications. The entry fee was raised from $10 to $20.

VERMONT AUTO BILL PASSED.

The Campbell bill, recently announced as before the Vermont legislature, has become a law, but one important section has, fortunately, been omitted, that compelling an automobile to stop when seventy-five feet distant from a horse-drawn vehicle, and to wait until the latter has passed.

NEW NATIONAL ASSOCIATION.

Chicago A. C. Issues Call to Illinois Clubs for Preliminary Action.

Special Correspondence.

CHICAGO, Jan. 2.—A national organization of automobile clubs has been undertaken by the Chicago Automobile Club. The board of directors of the local organization has issued an invitation to all the clubs of the State to meet in Chicago, February 8. It is proposed that this State organization shall be the nucleus for a national association. The State convention will be held in the clubhouse of the Chicago organization. The call was sent out by Secretary Spangler, of the Chicago club.

This meeting will be one of the more important side features of the fourth annual exhibition of the National Association of Automobile Manufacturers, which will be held in the Coliseum and Coliseum Annex, February 4 to 11.

President John Farson, of the Chicago club, has announced his resignation. At the request of Ira M. Cobe, the newly-elected president, Mr. Farson will remain in office until March 1. Mr. Cobe is now, however, in active charge of the management of that office. Speaking of his retirement, Mr. Farson said:

"I am compelled to be in New York such a large part of the time that I have felt that it was not just to the club to remain longer as president. I was re-elected against my protest."

CLOSED CARS IN DETROIT.

Several Appear with the Snow—Y. M. C. A. Auto School Opens.

Special Correspondence.

DETROIT, Jan. 2.—Not enough snow has fallen in this section of the country to retire the motorist or cool his enthusiasm for the coming year. The most noticeable thing about the development of the past few months is the increase in large touring cars and limousine bodies owned here. Several of the handsome closed cars are making their appearance on the streets.

The winter term of the Y. M. C. A. auto school will open this week and a number of competent instructors have been engaged to take charge of the various departments. The school is working on a much larger scale than ever before and is accomplishing a great work. There are two classes, one for beginners and the other for those more advanced. F. L. Faurote, assistant superintendent of the experimental department of the Olds Motor Works, has accepted a position as instructor in the advanced class. Mr. Faurote was a graduate of the University of Michigan in 1903 and for some months prior to the close of the fall term taught the classes of the school.

The new instructor in the elementary class is Bernard Fishback, of the Packard Motor Car Co., superintendent of the erecting department. Special lectures will be given by H. M. Coffin, superintendent of the experimental department of the Olds Motor Works; A. P. Brush, mechanical expert of the Cadillac Automobile Co., and E. J. Stoddard, of Parker & Burtons.

POWER BOAT RACES AT KIEL.

Special Correspondence.

BERLIN, Dec. 20.—A preliminary outline of the auto boat events to be run next year by the German A. C. during the Kiel regatta week is now to hand. A tour from Kiel to Travernuente is to be held on June 30, while the previous day is given over to short distance trials, for which racing, cruising and fishing boats are eligible. The following classifications have been made:

Racing Boats—Class a, boats from 18.01 to 25 meters in length; b, from 12.01 to 18 meters; c, from 8.01 to 12 meters; d, 8 meters and less. Horsepower unrestricted in all classes. Pleasure boats, a, boats with motors of ten and more horsepower; b, boats with motors of less than 10 horsepower. Fishing boats, a, boats up to 20 meters in length, without rigging; horsepower unrestricted; b, boats with rigging and of not more than 20 meters in length.

The course is the same as last year. All starts are flying.

Prince Christian Kraft of Hohenlohe is at the head of the committee, of which Baron Brandenstein is the secretary.

A CANADIAN TOURIST.

H. C. McLeod Has Driven More than 11,000 Miles in American Car.

Special Correspondence.

TORONTO, Jan. 2.—H. C. McLeod, of Toronto, general manager of the Bank of Nova Scotia, has driven upwards of 11,000 miles, including one trip to New York and Boston, returning through Maine and New Hampshire and via of Montreal. He has made some record runs, one of which was from Buffalo to Toronto recently, to reach the sick bed of a friend. His car, a four-cylinder 1904 model Peerless, has given great satisfaction, the trip to New York being made without once lifting the bonnet from the engine. Mr. McLeod, who was formerly an enthusiastic yachtsman, now devotes most of his attention to his automobile.

SYRACUSE AUTO TRACK PROJECT.

Special Correspondence.

SYRACUSE, Dec. 26.—A movement is on foot in this city to erect a banked track for automobiles, with accompanying grandstands, within easy reach from the city by trolley car. The plans also include the promotion of automobile race meets during the season. Well-known local and non-resident automobilists are interested in the track project, but their names are being withheld for the present. Members of the Automobile Club of Syracuse, including President W. L. Brown and C. Arthur Benjamin, endorse the project and are not backward in saying that it will be carried out successfully.

The track at the New York State Fair Grounds can not be secured for auto race meetings without consent of the State Fair Commission, which last fall declined to unite with the local club in pulling off a race meeting when one was proposed.

It has been suggested that several clubs of this section take hold of the track project, or that the New York State Automobile Association try its hand in the promoting game.

In After Years.—Again the village blacksmith stood under the spreading chestnut tree.

Jingling the coins in his pockets, he spake:

"I care not who makes the autos of the nation provided I make the repairs."—*Chicago News.*

An Automobile passed through our village last Tuesday morning with four occupants. It is the second one to pass through in the history of our town.—*LaBelle (Mo.) Star.*

HERKOMER CUP COURSE.

Tortuous Mountain Road in Germany Selected for International Contest.

Special Correspondence.

BERLIN, Dec. 20.—Great preparations are on foot in North and South Germany for the Herkomer Trophy and Bleichroeder Prize contests; a combination that is expected to draw a large and international assemblage of motorists to Bavaria in August next. England will certainly be represented to honor one whom she regards as her own—Professor Hubert von Herkomer—while Germany will exert herself to the utmost as Professor von Herkomer is a Bavarian by birth. France is ever ready to participate in whatever is going, so an international event is already assured. America will be a most welcome guest and the entries from other countries are only a question of time.

THE AUTOMOBILE has already published the preliminary regulations governing the event, which is divided into a hill-climb, a speed dash and a three-days' tour in South Germany. This comprises the Herkomer Trophy and is open to touring cars only. The Bleichroeder prize, which is in cash, is divided into two classes—hill-climb and speed-trial, for racing cars—over the same routes as those prepared for the Herkomer event.

The German and Bavarian Automobile clubs, which are arranging the week, have selected a most lovely mountain road in the neighborhood of the townlet of Kochel, sixty-seven kilometers south of Munich, for the ascent. The road is about seven meters wide, splendidly surfaced and for a distance of 5,000 meters there is a grade of 5 per cent. to negotiate, after the start having been made downhill. Stout heart and stout car and an ability to take curves will do much to gain the day for both touring and racing cars, as the route along the Kesselberg is full of twists and serpentine turns, doubling on each other. The Jochberg Wall rises up stark and gloomy on one side nearly all along the course, while forests and precipices, carefully railed in, are on the other side. The views are nothing less than idyllic, the road leading from the Kochel lake to the Walchen lake, two of the most noted lakes of the Bavarian Highlands.

For the second part of the program, the racers will use a course laid in the Forstenried Park, about five miles outside Munich, where six kilometers of good level surface with but one moderate curve call for good times. The speed trials are to be held on the main road leading through the park, which is carefully wired in, in its entirety, as it is a Royal Game Park. The track runs from Unterdill, the start, to Oberdill, the finish, and will be prepared with Westrumite; it is also six meters in width and is not lined by trees, as is usually the case. The trees stand some distance back from the road.

Prizes have been given freely for both events, Professor von Herkomer himself having promised to paint the portrait of the victor in addition to the beautiful trophy he is working at, and Baron von Bleichroeder has presented 10,000 marks in cash for two prizes in money of 8,000 and 2,000 marks ($1,600 and $400) for the cars with the best aggregate times in both the climb and dash. This should draw a good professional entry from all parts of the motoring world.

OPINION ON WEST VIRGINIA ORDER

An order prohibiting the operation of automobiles on any of the highways of Grant county, West Virginia, was issued by the

council of that county on October 8 last, the penalty for violation of the order being $100. The matter has been taken up by the National Association of Automobile Manufacturers, New York, whose attorney has prepared an opinion to the effect that the order is an illegal usurpation by the county council of legislative power; that it violates both State and Federal constitutions by depriving citizens of liberty and property without due process of law; that it is an excess of the police powers of the State; and that it discriminates between users of the highway, and is therefore void.

BUFFALO SHOW PLANS.

Special Correspondence.

BUFFALO, Jan. 2.—An important move in the preliminary plans for the automobile show to be held in Convention Hall, this city, from March 6 to 11, was made last Friday, when D. H. Lewis, manager, began to issue application blanks for space and other accommodations to be allotted to exhibitors. These have now been mailed to every automobile concern in the country, and an unusually large number of exhibitors is expected. The show has been sanctioned by the N.A.A.M., and will be conducted by the Buffalo Automobile Trade Association, under the auspices of the Automobile Club of Buffalo, and with the combined efforts of these organizations success is practically assured.

BALKING THE GOOD ROADS BILL.

Special Correspondence.

PHILADELPHIA, Dec. 26.—After a trial of a year and a half the much-lauded Good Roads bill, which was expected to do so much toward improving the highways of the Keystone State, is acknowledged to be a dismal failure. Much patching and revamping of the law will be required at the next session of the Legislature if any good is to come from it. The latest snag to interrupt its working is the refusal of township supervisors to approve applications for a stretch of new road, despite the fact that a majority of the property owners had signed the petition. At the next session of the Legislature it is proposed to so amend the law as to make it obligatory upon the part of the supervisors to approve when a majority of the property owners along the proposed new road have petitioned for the improvement.

NEWARK FACTORY FOR BRISCOE.

The Briscoe Mfg. Co., of Detroit, Mich., has selected a location for its eastern plant in Newark, N. J., at the intersection of Bleecker and Summit streets and Central avenue. A lease has been secured, with option of purchase, of a three-story and basement brick factory and warehouse having a frontage on three streets—135 to 143 Bleecker street, 62 to 66 Summit street and 156 and 158 Central avenue. The building covers an area equal to about half a city block, and will accommodate about 350 hands. John Stern, who has been superintendent of the Detroit plant, will manage the new works, and is already at work supervising the installation of several carloads of special machinery for the plant, which, it is anticipated, will be in full operation by the middle of January, turning out the same line of parts as the parent factory in Detroit. The company's general offices will remain in Detroit, but a branch sales department will be maintained in Newark, in addition to the company's salesroom at 35 Warren street, New York.

TRADE CLUB IN DETROIT.

Leading Sales Managers Organize to Entertain Visitors and to Fraternize.

Special Correspondence.

DETROIT, Jan. 2.—The automobile tradesmen of Detroit have formed a temporary organization for mutual benefit, to be known as the Detroit Automobile Club. At first glance it would look as if they were infringing on the name of the present automobile club, as it is commonly referred to by the same title, but the real name of the club now in existence is the Automobile Club of Detroit, and so the tradesmen are safe in the transposition.

The nucleus of the new club will be about 100 men interested in automobile building and selling in this city. The initiative in launching the organization was taken by William E. Metzger, of the Cadillac; Roy Chapin, of the Olds, and W. E. Broadwell. Its headquarters will be in the basement of the Russell House, and the quarters will be fitted up in luxurious style.

"One of the purposes of the club," said Mr. Metzger, "is to provide a place for entertaining the visiting trade and customers. We like to have a place to take them to dinner occasionally, and this will provide it, as well as make for better results among ourselves. We can meet here and fraternize, and run in and out and have a good time. In time it may develop into a big general club, but just for the present it will be confined to trade interests. Detroit is preeminently the leading city in the country for such a club, as it is the heart of gasoline automobile manufacturing, and, consequently, has more interest in the trade and more visitors than any other automobile city."

THE NEW A. C. A. CLUBHOUSE.

President Morris, of the Automobile Club of America, has issued a circular to members of the club announcing that the proposed new clubhouse and garage calls for an expenditure of $420,000, of which it is planned to raise $150,000 by issuing to club members second mortgage 4 per cent. bonds in denominations of $500 and $1,000, the remainder to be taken care of by money on hand and a first mortgage. Members have already subscribed for bonds to the extent of $100,000, and the club desires that as many as possible of its members should be bond holders. The report of the Board of Governors regarding the new clubhouse and garage will be presented at a general meeting of members to be held at the club rooms, Fifth avenue, January 10, when further action will be taken in the matter.

NOTES OF THE CLUBS.

NEW YORK.—The recently organized New York Motor Club will hold its first annual dinner at the Hotel Astor, New York City, on Sunday evening, January 15. Sir Thomas Dewar will, it is anticipated, be the guest of honor, and among others expected to be present are Professor F. H. Hutton, of Columbia University; Dave H. Morris, President of the A. C. A.; W. E. Scarritt, ex-president of the club; H. W. Whipple, president of the A. A. A.; and the heads of various New York City departments.

UTICA, N. Y.,—The A.C. of Utica will hold a banquet at the Butterfield House at 8:30 P. M. January 9. The committee in charge is composed of President Eduard Bushinger, Secretary-Treasurer Harry H. Mundy, George M. Snyder, E. E. Reynolds and J. H. Jefferson. Among the guests expected are Harlan W. Whipple and C. H. Gillette, president and secretary, respectively, of the A.A.A. The club is now in a flourishing condition. Nine new members were admitted at its last monthly meeting, among them being S. B. Stevens, the well-known amateur driver, of Rome, N. Y.

BUFFALO.—The A.C. of Buffalo will give an entertainment in its club rooms on the evening of January 10 for its members and friends. A splendid program is being prepared.

NEW TORONTO AGENCIES.

American Cars that will be Represented by Canadian Houses.

Special Correspondence.

TORONTO, Dec. 31.—The first new automobile of the season has arrived in Canada, a Model N., Packard, owned by Mr. J. E. Eaton, of Toronto. Mr. Eaton was the first Canadian to import a 1904 model, also a Packard. Three other gentlemen of the same firm to which he belongs, the T. Eaton Co., have ordered Packard cars.

The Canada Cycle & Motor Co., the largest firm of automobile dealers in the Dominion, has completed its contracts for 1905 and will handle the following cars: Pope-Toledo, Pope-Hartford, Pope-Waverley, Pope-Tribune, Packard, Ford, Peerless, Thomas, Mitchell, Stevens-Duryea and Autocar.

The Winton cars will be handled by the Automobile Supply Co., Toronto.

The Oldsmobile will be manufactured and sold by the Packard Electric Co., St. Catharines, which has erected a large automobile factory in addition to its present plant for electric supplies.

The Ford Motor Co., of Canada, at Walkerville, Ont., is turning out 200 cars for the Canadian trade.

The annual report of the Canada Cycle and Motor Co. makes the following interesting comment on the Canadian automobile business in 1904:

"The volume of automobile business was much larger; the number of cars sold greater, and the character of the vehicles improved. The result has been not only larger business, but the bringing of the motor vehicle to public attention and general popularity. During the year the company continued to handle automobiles of the most advanced types made in the United States, in all cases holding the exclusive agency for Canada of the lines handled. This policy will be continued during the coming year. In addition we have now embarked upon the manufacture of automobiles of our own design, which will in the future be manufactured in our own factory."

NEW COLUMBUS COMPANY.

Special Correspondence.

COLUMBUS, Ohio, Jan. 2.—The Evans Automobile Co., of this city, has been incorporated by G. W. Smith, W. E. Evans, Smiley Caldwell, J. C. Morrison and Charles E. Leist, and elected the following officers: J. C. Morrison, president; Smiley Caldwell, vice-president; George W. Smith, secretary; Charles E. Leist, treasurer, and William E. Evans, general manager.

The quarters of the company will be at 63 East Gay street, where it will conduct a general business in automobiles, bicycles, repairing and sundries, as well as an automobile livery. Later on the company expects to install a plant for the manufacture of a new machine which is now being perfected.

The city council of Wilmington, Del., and the Street and Sewer Department, the latter having exclusive control of the streets, appear to be at loggerheads over the proposed automobile ordinance in that city. The measure was introduced in council three weeks ago, and was referred by that body to the Street and Sewer Department. Nothing has since been done with it, and it seems as if nothing will be done with the matter for some time.

The F. O. Bailey Carriage Co., of Portland, has renewed a contract with Thos. B. Jeffery & Co. to handle Rambler automobiles in the State of Maine for the season of 1905. Last year the Rambler business in Maine was handled by the Maine Motor Carriage Co., which, however, was practically the F. O. Bailey Carriage Co., which this year has given up all other makes and will push Ramblers exclusively.

Thos. B. Jeffery & Co., of Kenosha, Wis., makers of the Rambler cars, have recently sold one of their 1905 models, fitted with canopy top, to the King of Siam. About 100 machines were shipped to the Orient by this company during the past season, and during the past week shipments of Ramblers were made by the Jeffery factory to New Zealand, Australia, South America, Siam, India and Italy.

Through an error in copy furnished for its advertisement in THE AUTOMOBILE of December 24 last, the price of the model F touring car of the Waltham Mfg. Co. was given as $1,500. This car is the 14-16-horsepower Orient light touring car with tonneau, and is to be sold at $1,650, the price of $1,500 applying to the 14-16 horsepower touring runabout.

F. H. Wheeler, of Indianapolis, sole agent for the Schebler carbureter, has taken an entire floor at 129-131 North Albany street, that city, and has made improvements in his manufacturing plant which permit an output of forty complete carbureters daily. The plant is running up to its capacity and a further increase will be arranged for as soon as possible.

E. P. Coffin, of Sewickley, Pa., is one of the principal persons interested in the formation of a plan for the operation of an automobile 'bus line in and near Sewickley. So many of the residents of the section are opposed to the building of a street car line through the valley that the automobile line was suggested as a substitute.

A trip of 400 miles, from Champaign, Ill., to Detroit, Mich., was made recently in two days by N. M. and B. F. Harris and another in a Packard Model L, which had been in use for a year. Besides the three passengers the car carried baggage, and notwithstanding the heavy load and indifferent roads, went through without mishap.

The Randliff Motor Car Co. has opened its new salesroom at 24-26 Columbus avenue, Boston, under the management of R. F. Coburn. The company is Eastern representative for the Panhard and Maxwell cars.

Harry S. Moore, a Cleveland dealer, who last year erected a new garage at the corner of Crawford road and Hough avenue, has found it necessary to double the size of his quarters for next season by an addition 40 by 100 feet. He is devoting most of his attention to storing and repairing cars. He is installing a number of machine tools in his repair department, and has put in a gas engine and generator for charging and power purposes.

It is again reported that Newport is planning the construction of a two-mile automobile race track, which is to be a feature of an amusement park to be located in the northern end of the city. Reginald C. Vanderbilt, chairman of the committee in charge of the automobile races at Sachuset Beach last summer, is among those interested.

Morsman & Morsman, of Dodgeville, Wis., are making preparations for the opening of an automobile, motorcycle and bicycle salesroom. The firm is a new one, and will carry a large line of machines, among which will be the Cadillac, Buick, Moline and Rambler automobiles, and Indian motorcycles.

An automobile passenger service is now in operation between Tonopah and Goldfield, Nevada. Two machines are being used, one a 40-horsepower vehicle of eight-passenger capacity, and the other of 30-horsepower, with a capacity of seven persons. Both machines make a round trip daily.

In a circular addressed to "Automobilists—present and prospective," the National Automobile Company announce that they have secured the agency for the Packard car in Washington, D. C. The first sample of the 1905 car was received at the National garage, on Fourteenth street, last week.

The Diamond Rubber Co., of Akron, O., makers of the Diamond tires, will publish a text-book early this month on the use and care of tires. Some catalogue features will be embodied, but the book will mainly treat of the proper care of tires, and will be furnished free of charge.

The Lippman Drug Co., of Savannah, Ga., announces the inauguration of a new department. In addition to its other business, the company now carries a full line of automobile supplies, launches, motors and launch supplies.

W. H. Knowles, of Ottawa, Ill., has secured the agency for the Cadillac and Locomobile cars for the coming season. In addition he will conduct a general repair station and carry a line of automobile supplies.

Crowle & Eyes, dealers in automobiles, parts and fittings, at Johns Road, Nailsworth, Adelaide, Australia, would be pleased to receive manufacturers' catalogues of complete machines and parts, together with price lists.

A. L. Kull & Co., of Washington, D. C., have added the Wayne car to their line. Mr. Kull is now on a trip to Mexico, in company with a number of Washington business men who are interested in a gold mine in Sonora.

The Reliance Motor Car Co., of Detroit, has increased its capital stock to $400,000, and will continue the manufacture of the Reliance car. One thousand machines are promised as the output for 1905.

Merton Hayes Wheelock, Tremont Building, Boston, has been appointed New England representative for the Cameron cars.

Clarence Haney, who recently resigned the assistant superintendency of the Cadillac Automobile Co., of Detroit, has succeeded John Stern in the management of the Briscoe Company's Detroit factory.

Raymond S. Aldrich has been engaged as regular traveling salesman for Gray & Davis, of Amesbury, Mass. Mr. Aldrich represented this firm at the late Louisiana Purchase Exposition.

Hays & Williams, 925 Wabash avenue, Terre Haute, Ind., have entered the automobile business, having an up-to-date garage and repair shop, and will also deal in automobiles and sundries.

MATHESON GOING TO DETROIT.

Special Correspondence.

DETROIT, Jan. 2.—Tom Cooper, the veteran driver, was back to his home in Detroit for the holiday season. It will not be long now before he is back in the city to stay, as he will come here from Holyoke, Mass., with the Matheson Motor Car Co., with which he has been connected for several months. The factory of the Matheson company will be located at the corner of St. Antoine street and the North Grand Boulevard and it will employ about 150 men, Mr. Cooper says. The company is busy turning out high-priced machines. Cooper is now concerned in selling cars. The Matheson people, he says, are not exploiting the racing features of the car, although at the time he joined forces with them it was intended to build a car for the Florida races. He predicts that at this meet all the American records will "go to smash."

RECENT INCORPORATIONS.

Frontier Gasoline Motor Co., Buffalo, N. Y.; capital $10,000; to manufacture gasoline motors. Directors, Louis Ducro, W. H. Ahlers, George F. Graf and Oscar F. Cheney.

Charles T. McCue Co., Hartford, Conn.; capital $50,000; to manufacture motors, engines, machines, wire wheels, ball-bearing axles, vehicle parts and vehicles. Incorporators, Charles T. McCue and Frederic Billings, of Hartford, and Herbert A. Wiley, of Boston.

Hubbard Motor Co., Middletown, Conn.; capital $50,000. Incorporators, Hendley W. Hubbard, Robert H. Downes and John T. Engeman.

Walter Automobile Co., Southampton, Suffolk county, N. Y.; capital, $250,000. Directors, William Walter, J. R. Van Derveer, New York, and J. J. McBride, Brooklyn.

Martin & Hoyt Motor Co., Camden, N. J. Incorporators, F. R. Hansell, Joseph F. Cotter and George H. B. Martin.

Weehawken Automobile Co., Weehawken, N. J.; capital, $3,000. Incorporators, Joseph W. Shellborn, Albert Lenly, Joseph L. Shellborn and Frederick R. Shellborn.

Reo Motor Co., New York City; capital, $10,000. Directors, R. E. Olds, Ciprian Andrade, Jr., and R. M. Owen.

Ardsley Motor Car Co., Yonkers, N. Y.; capital, $75,000. Directors, Theodore S. Fuller, Frederick P. Fuller, of New York, and A. E. Rittenhouse, Newark, N. J.

Brackett Automobile Co., Portland, Me.; capital, $15,000. Officers, J. W. Anderson, president; J. R. Parsons, treasurer.